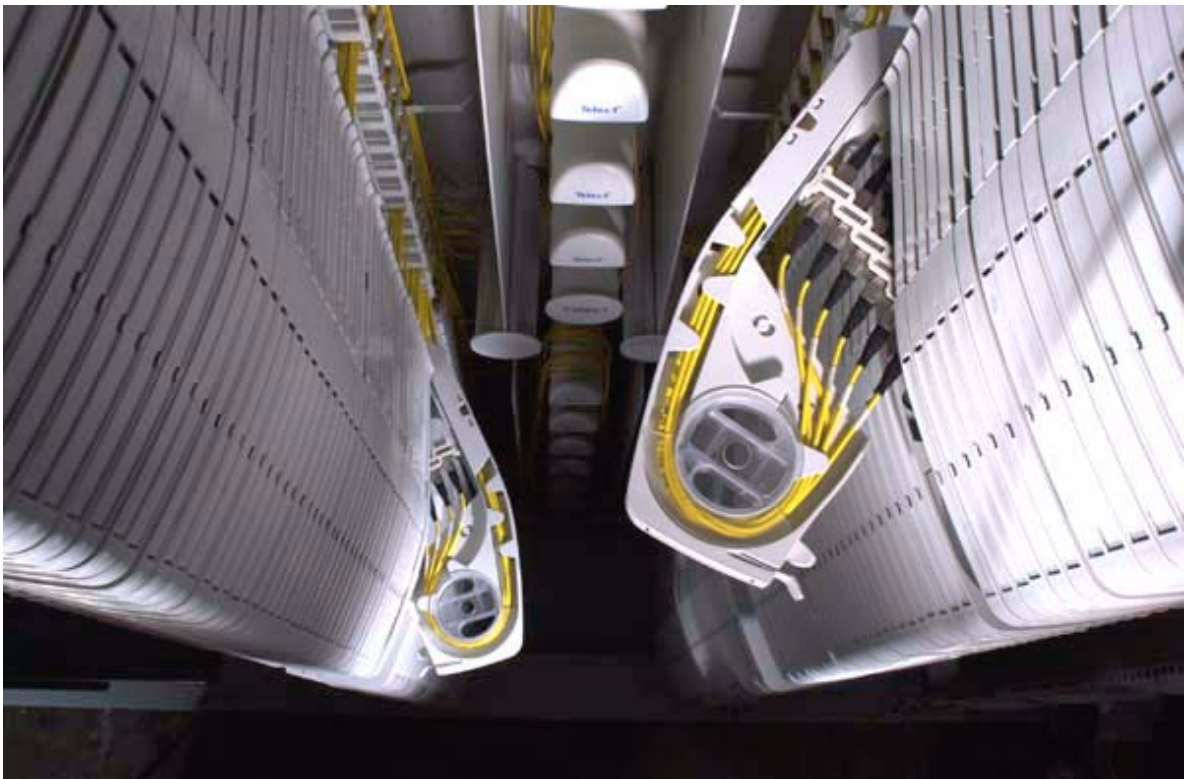


Advanced Distribution Frame (ADF) Systems

User Manual



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User Manual 119736-4 A0

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Advanced Distribution Frame (ADF) Systems

User Manual

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Chapter 1: Description

Advanced Distribution Frame (ADF) Systems

1.1 Overview

Telect's ADF Systems provide inter-connectivity and cross-connectivity of intrafacility cables, network elements, and patch cords.

- Each Main ADF consists of an upright frame holding a vertical array of modules on each side of a patch cord interconnect routing area.
- Each module holds trays for interconnections or cross-connections.

Each swing-out tray supports 6, 8, or 12 optical connections, depending on the type of adapter.

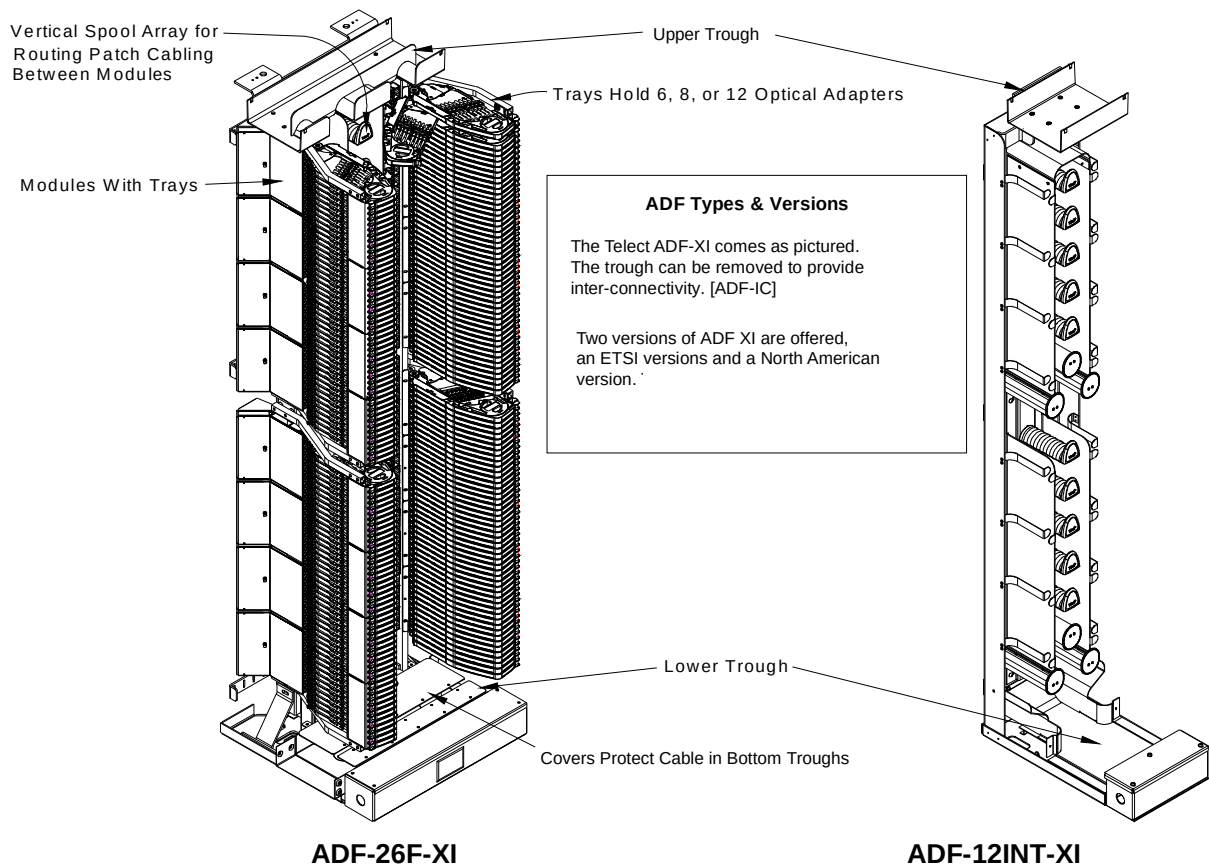


Figure 1 - Advanced Distribution Frame System

- ADFs with 12 adapters per tray have up to 2304 junctions per bay (LC).
- ADFs with 8 adapters per tray have up to 1536 junctions per bay.
- ADFs with 6 adapters per tray have up to 1152 junctions per bay.

Figure 1, “Advanced Distribution Frame System” on page 1, depicts a multipurpose ADF XI bay with a complete array of modules and an ADF InterBay Storage panel.

The area between right-side and left-side modules contains various spools for routing patch cords and/or pigtail interconnects. Bulk patch cord storage is provided by InterBay Storage Panels (ISPs) located between Main ADFs in ADF System lineups.

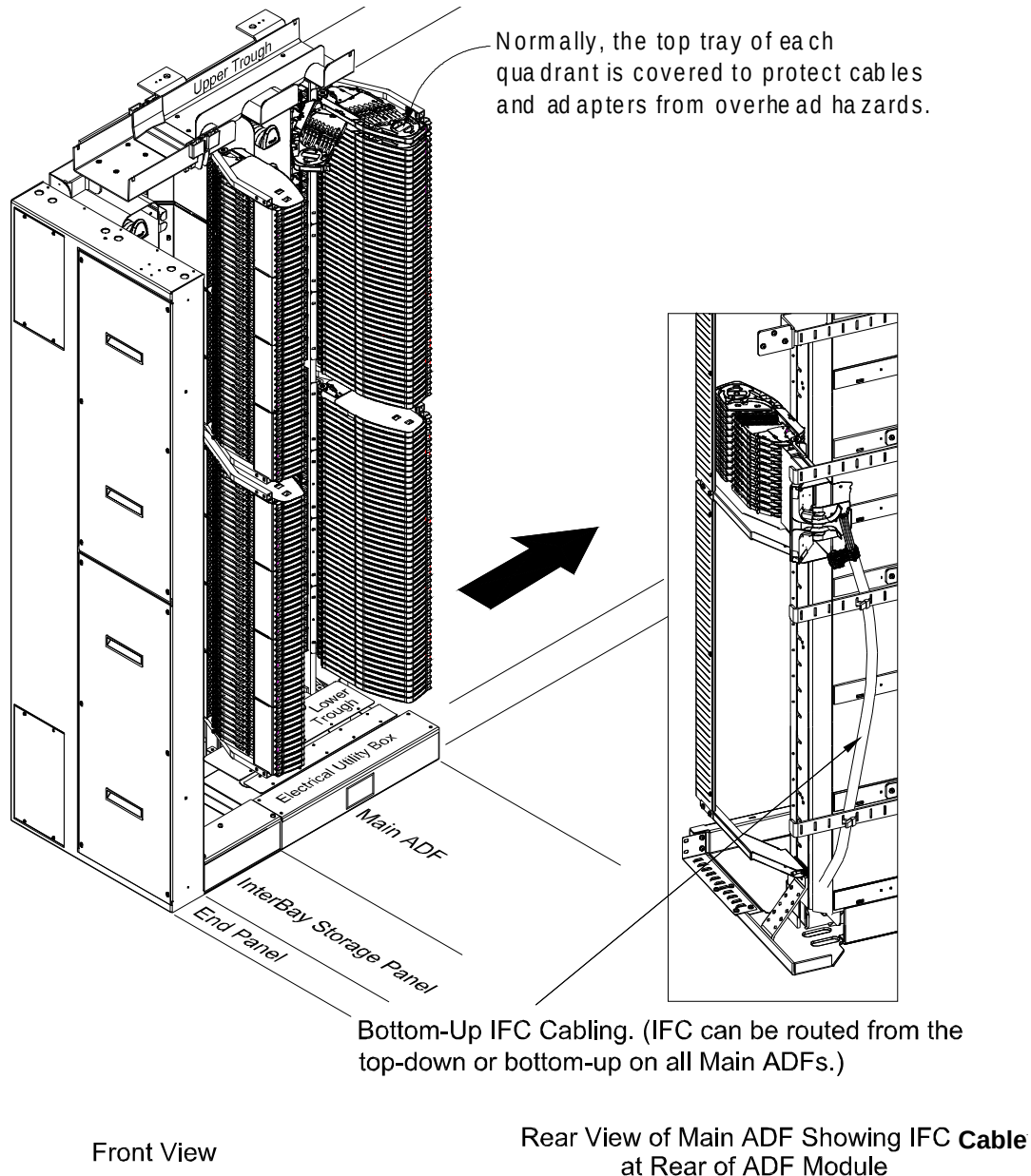


Figure 2 - Typical Lineup Using ADF Cross-Connect / Interconnect (XI) Bays

ADF system lineups consist of Main ADFs, ISPs, and end panels.

Cable, patch cord, and pigtail access differs somewhat between Telect's ADF Cross-Connect / Interconnect (XI) and Interconnect (IC) Systems, but generally IFC, OSP, or network element

(NE) access are connected at the rear of the modules. Patch cords, as well as NE pigtail interconnects, are connected at the front of the modules. In cross-connect applications, patch cords are routed between modules on different Main ADFs through upper and/or lower ADF troughs.

1.1.1 ADF System Features

- Industry-leading termination density
- Simple, straight-forward cable management, access, circuit identification and isolation
- No fishing of cables
- Total front access for patching
- Designed for compliance (fiber bend radius control, flammability safety, structural reliability) throughout ADF design
- No line-of-sight laser hazards
- Easy access to riser/network/patch cord interconnections and cross-connections
- Light-weight, heavy-duty frame certified for Zone 4 earthquake reliability
- Easy installation
- 600-mm and 26-in. rack widths that accommodate standard lineups
- Diverse routing with reduced cable congestion. Diverse routing between ADFs using upper and/or lower troughs.
- 4.5-m standard, single-length patch cords for ADF cross connections
- Unique storage spools with wave-like ridges for grouping patch cords
- Variable placement of tray modules on ADF mounting rails
- Compatible with WaveTrax™ Cable Management System and other cable management systems

1.2 ADF System Bays

As mentioned, ADF Systems consist of Main ADFs with modules, InterBay Storage Panels (ISPs), and end panels.

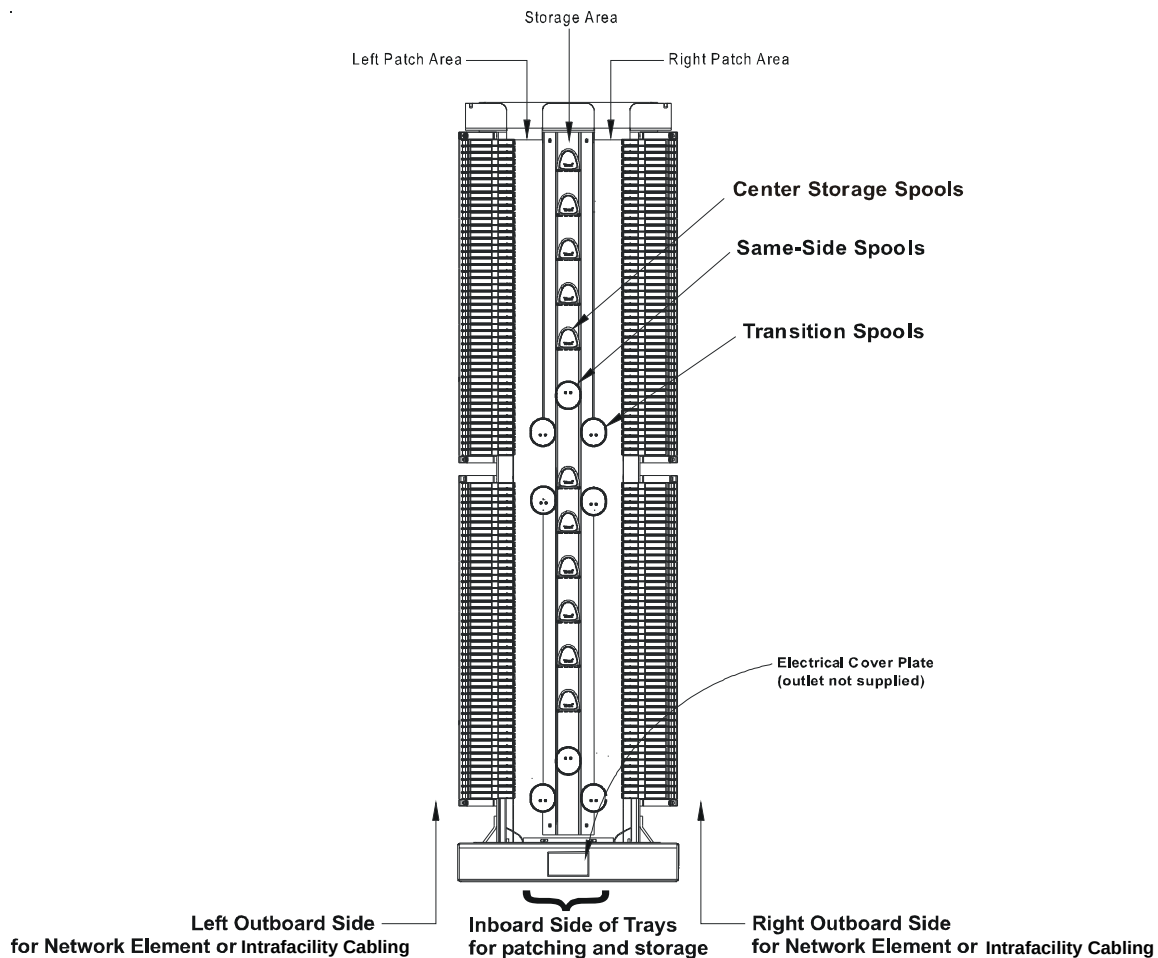


Figure 3 - Main ADF (Typical, Front View with Tray Modules)

Main ADFs, such as the Main ADF XI in Figure 3, above, consist of a central cable storage area with mounting rails for the fiber tray modules. The routing area contains several types of spools for directing and redirecting patch cords and pigtail interconnects.

Interconnect and cross-connect cabling differs somewhat between the Main ADF XI and IC bays:

- Main ADF XI - Interconnection and cross-connection cabling to the inboard patch areas is provided by either upper and/or lower cable troughs. Drops in the troughs ensure cable bend radius control. Junctions are provided for coupling the upper and lower troughs to other Main ADFs or InterBay Storage Panels in the lineup.
- Main ADF IC (Specialized for Interconnections) - Interconnect cabling to the inboard patch area is by direct access from a cable management system above the ADF lineup. Junctions

are provided for coupling the lower troughs of all Main and InterBay Storage Panels in the lineup.

At the bottom is an electrical raceway for power cabling and conduit. The raceway provides a mounting area for a standard recessed receptacle or other wiring device.

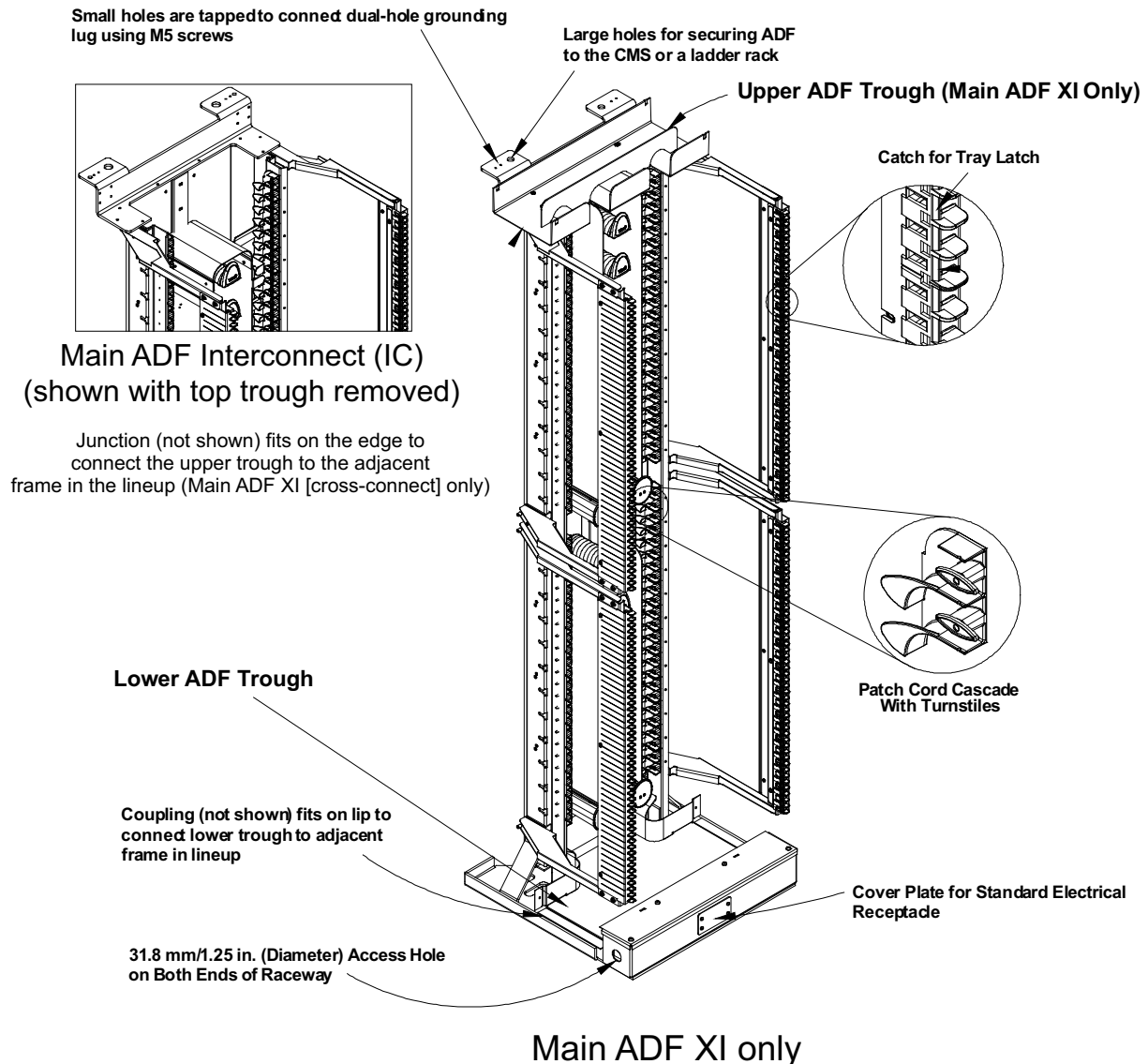


Figure 4 - Main ADFs (as Shipped, without Tray Modules)

An InterBay Storage Panel (ISP) is used for storage of either patch cord cabling from an overhead CMS and/or inboard cabling terminated at IFC or NE modules. Except for the tray modules, cable routing through an InterBay Storage Panel is similar to that of a Main ADF.

The Main ADF and ISP can be mounted directly to a concrete floor or on a raised equipment floor. (A template is provided for mounting panels to the floor.) Support is provided at the top for added earthquake security and for attaching to a cable management or ladder rack system.

Normally, ADF lineups are terminated at each end by ADF End Panels secured to adjacent ISPs.

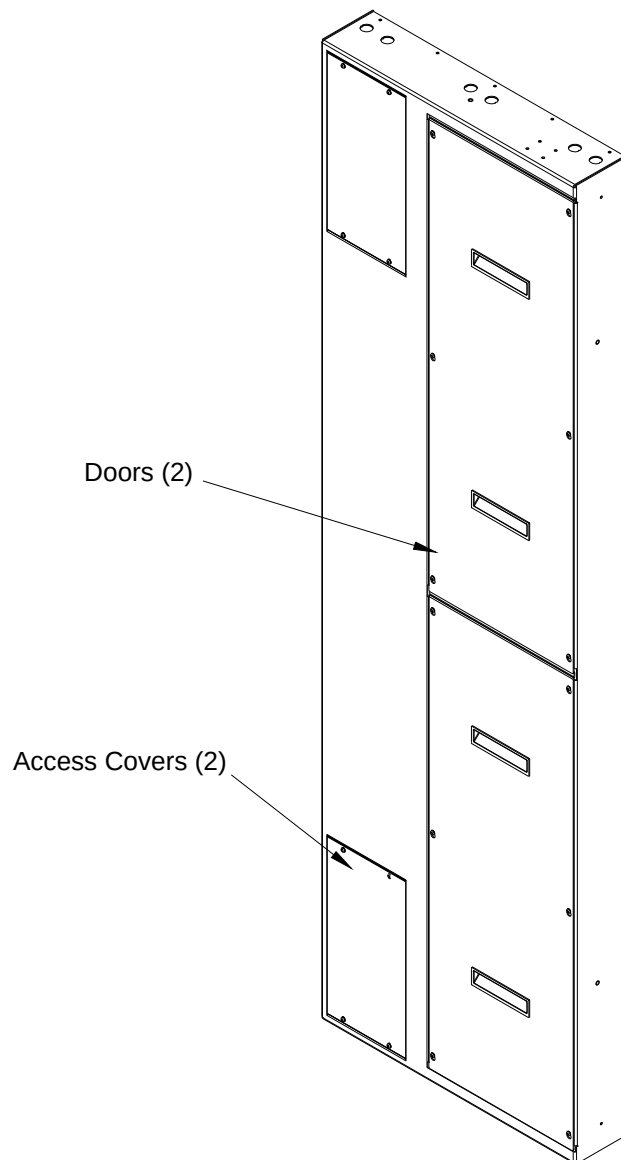


Figure 5 - End Panel

You can configure two types of ADF System bays that fit North American and ETSI footprints:

1. ADF Cross-Connect / Interconnect (XI) Bays
2. ADF Interconnect (IC) Bays

The subsections that follow describe and illustrate various cabling scenarios provided by each of these types of ADF systems. Chapter 2, “Applications” on page 19, provides comprehensive and comparative analyses of cabling using these two systems.

1.2.1 ADF XIs

ADF Cross-Connect/Interconnect bays are used in either cross-connect or interconnect applications, depending on the type of module installed on the Main ADFs. Lineup access to the patch cord area on the Main ADFs is through either the bottom or upper troughs with access to/from patch cord storage on the ISPs via the bottom trough.

Two models are available:

1. The North American model is based on a 26 in. by 24 in. Main ADF footprint. ISPs for the North American model are 12 in. by 24 in.
2. The ETSI model is based on a 600 mm by 600 mm Main ADF footprint. ISPs for the ETSI model are 300 mm by 600 mm.

The following figures show a few typical cross-connection and interconnection schemes between IFC and network element (NE) cabling. In these examples, IFC routing to the rear of the IFC ADF modules is from the facilities cable (ladder) rack with NE cabling through a cable management system (CMS).

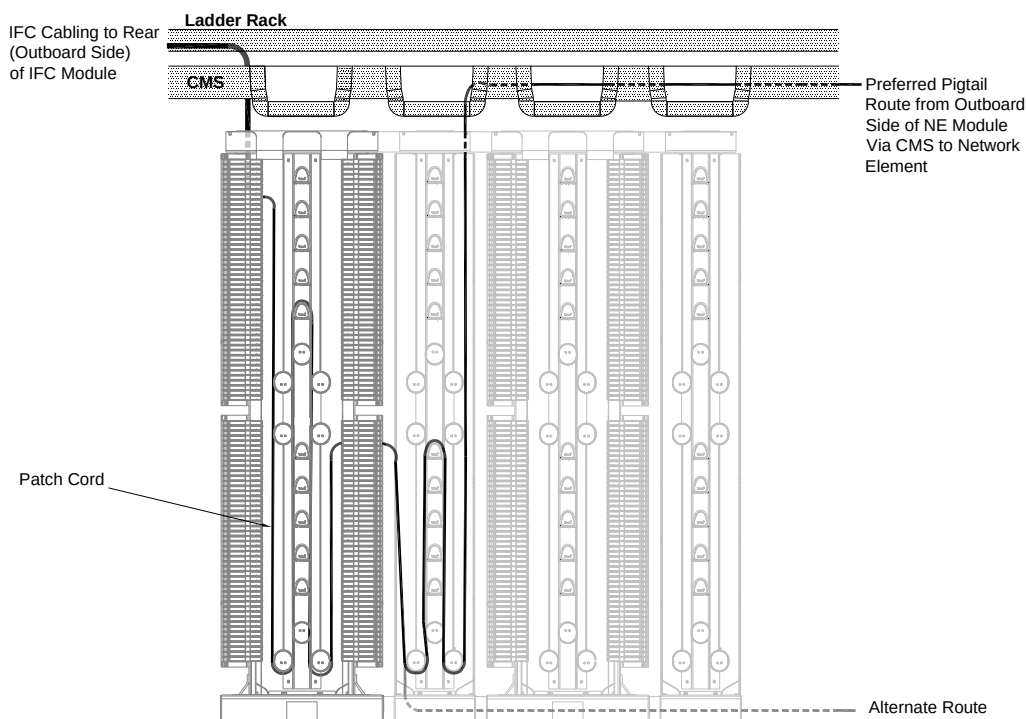


Figure 6 - XI Cross-Connect IFC to NE22

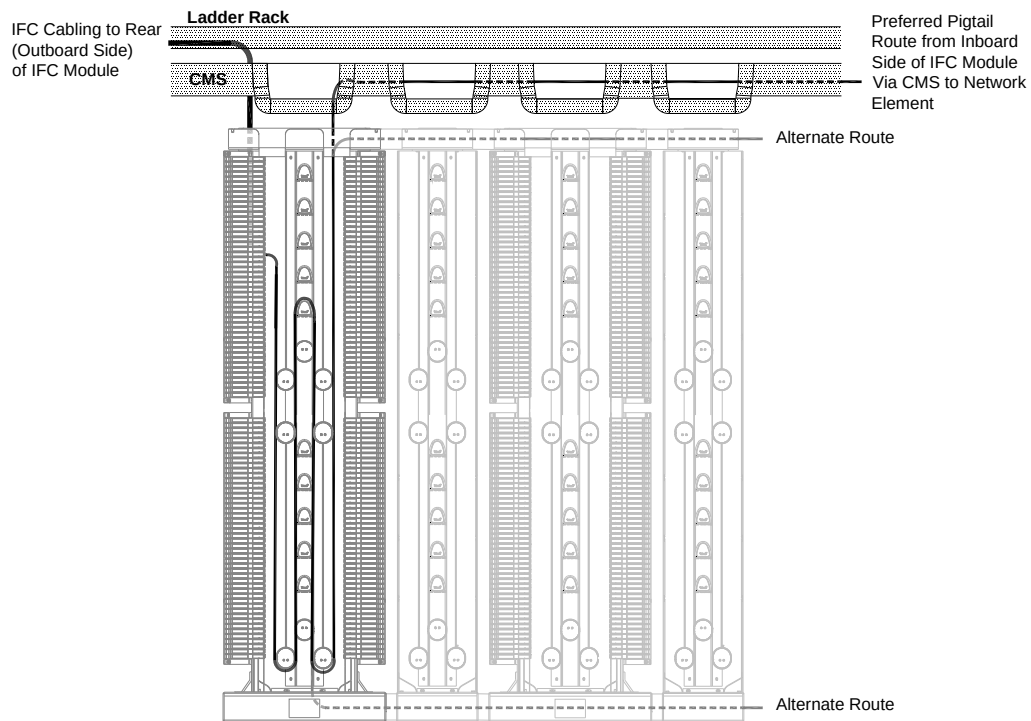


Figure 7 - Interconnect IFC to NE33

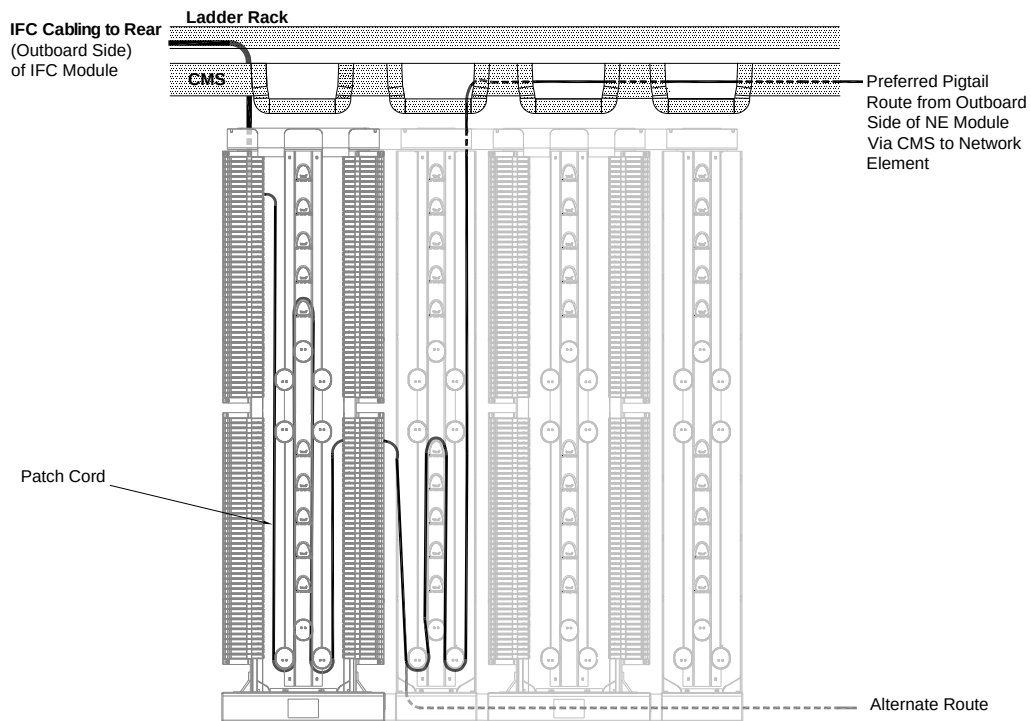


Figure 8 - Cross-Connect NFC to IE

1.2.2 ADF ICs (after Trough Removed)

ADF Interconnect (IC) bays are physically similar to but functionally quite different from the ADF XI bays.

To convert XI to IC, remove the top trough. With the top trough removed, the overhead access to the patch area of a Main and ISP ADF ICs is confined to a center drop from an overhead cable management system. Both Main and ISP ADF ICs feature an interconnected bottom trough for routing cable between the ADF IC bays.

ADF XI and IC bays can be used in the same lineup; cross-aisle connections between lineups are common applications for ADF ICs.

The following figures show a few typical interconnection schemes between IFC and network element (NE) cabling. In these examples, IFC routing to the rear of the IFC ADF modules is from the facilities ladder rack with NE cabling dropped from an overhead cable management system (CMS).

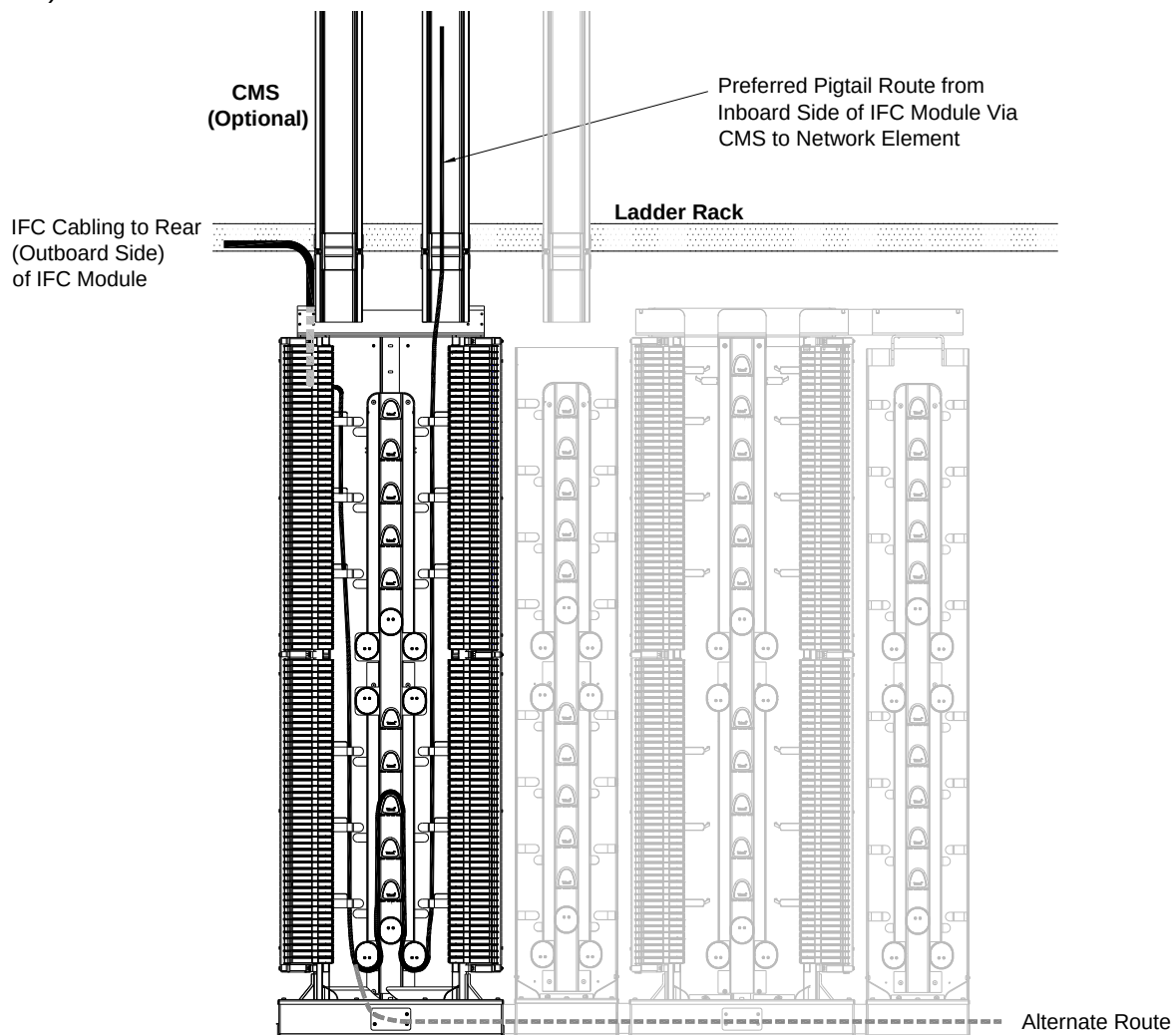


Figure 9 - IFC to NE Interconnection Using ADF ICs in an ADF Lineup

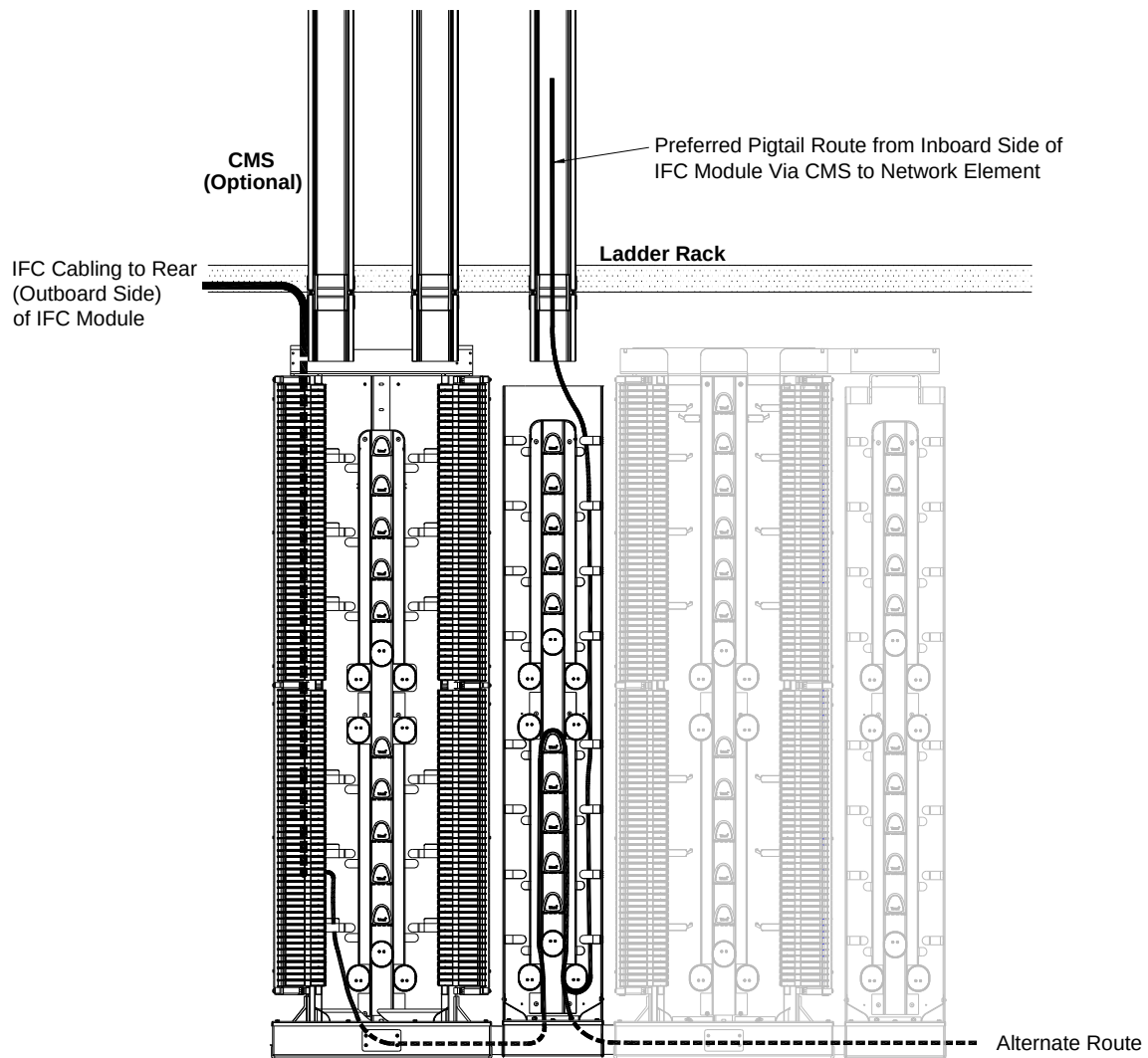


Figure 10 - IFC to NE Interconnection Using ADF ICs in an ADF Lineup (with ISP Storage)

1.3 ADF Modules

Normally, Main ADFs are dedicated to either interconnection between intrafacility cabling and facility elements, or cross-connection between the network elements. The difference lies in the type of ADF modules on the right and left sides of the Main ADF Panels.

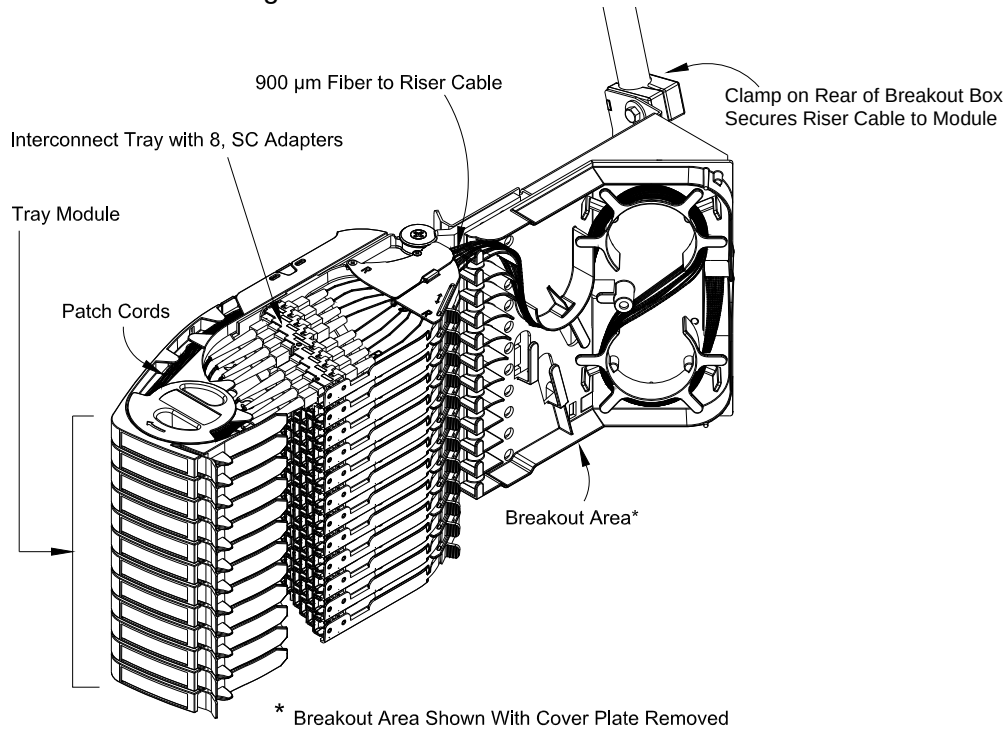


Figure 11 - Outboard View of Right-Hand, Intrafacility Cable (IFC) Module

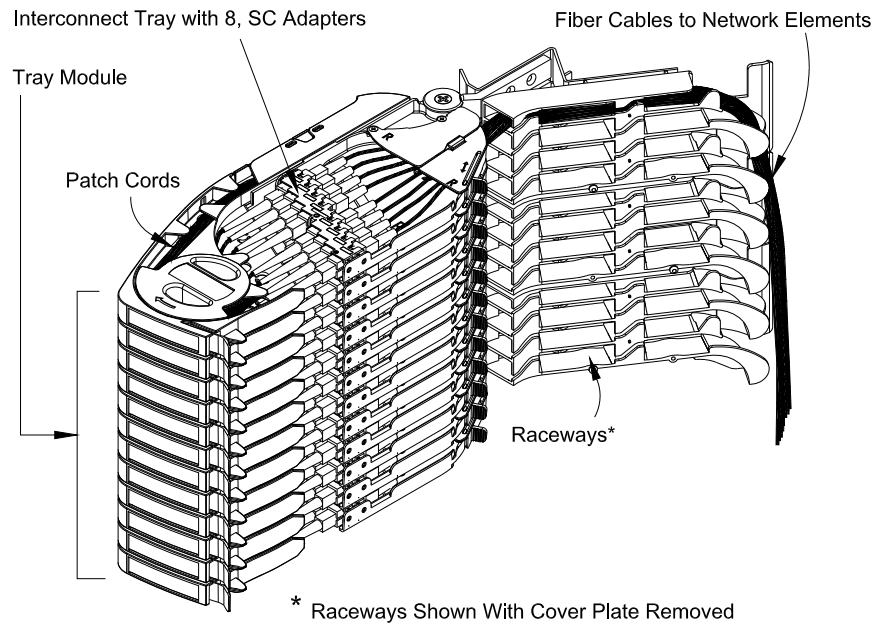


Figure 12 - Outboard View of Right-Hand, Network Element (NE) Module

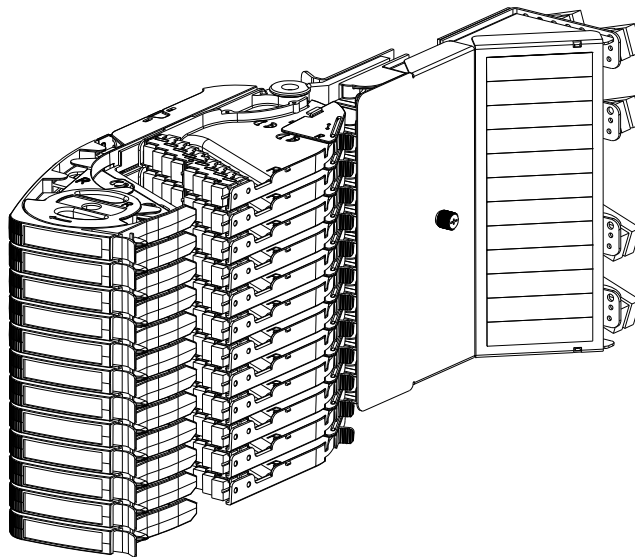


Figure 13 - Fan-Out Module

ADF modules are available for accommodating ribbon cabling, combining patching with fiber splicing, splitting and other capabilities. The modules come in right- and left-side versions, for the right and left sides of the Main ADF.

Three types of modules are available, depending on application:

1. The IntraFacility Cable (IFC) module contains a breakout area for routing standard 900 micron fiber cabling from a rear-side clamp holding the riser cable. The 900-micron fibers are routed to optical adapters in the trays.
2. The Network Element (NE) module contains raceways for routing standard 2-mm network element cabling to the adapters.
3. The Fan-Out (FO) module accommodates up to 12 different multifiber cable clamp positions.

Individual trays swing toward the inboard area of the Main ADF to simplify the cabling process. The trays contain a moveable adapter bridge that slides toward the rear when the tray is opened. The sliding bridge provides slack management as the tray opens.

Fiber cables from the breakout area or raceways are routed under a cover to the rear side of the adapters. The patch cords connected to the front side of the adapters are routed around a spool containing a retaining flange, through a raceway, to a vertical array of cascade guides with turnstiles attached to the inboard patch area of the ADF. A door at the end of each raceway helps guide cables downward into the patch area.

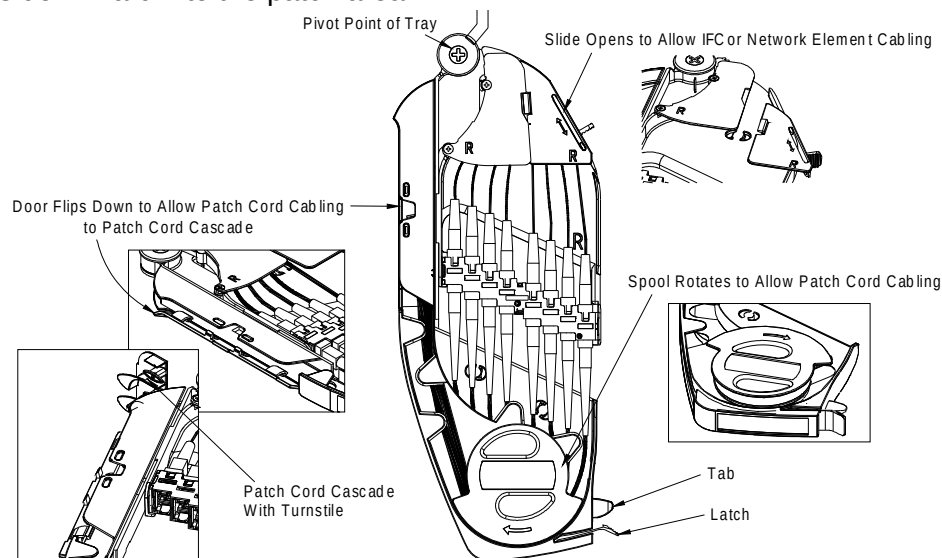


Figure 14 - Patch Tray (Physically the Same for IFC, NE, and FO Modules)

1.4 Telect ADF Feature Comparison

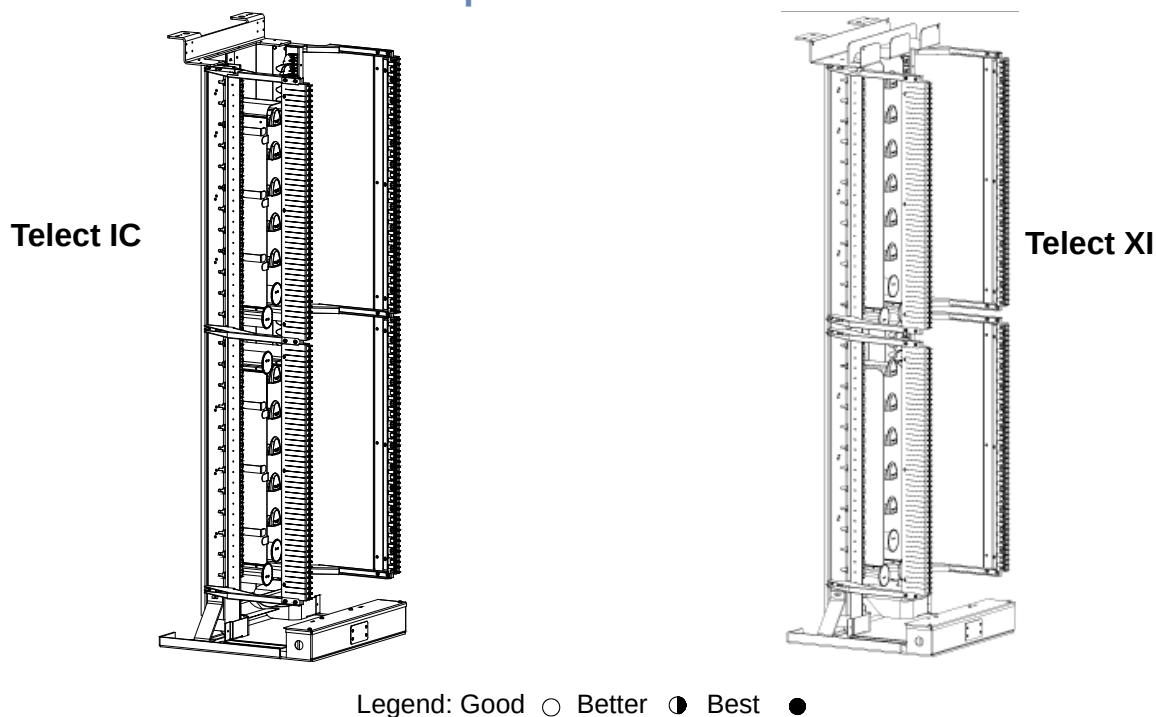
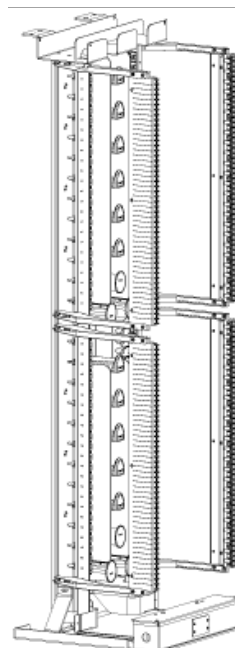
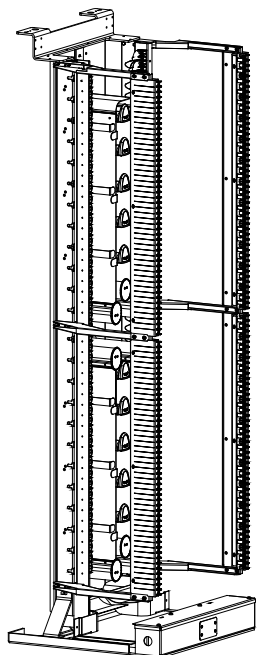


Figure 15 - ADF Comparisons

Capacity		1536 (2304)	1536 (2304)
	Max. Terminations/ Ft ² (Small Form Factor) LC	396 (594)	396 (594)
	Maximum Frames in a Lineup at Max. Density	7 (LC)	4 (LC)
	Maximum Terminations in a Lineup	16,128 (LC)	4,860 (LC) (4x2304)
	Flexibility to Grow	Yes	Yes
Application		●	
	Inter-Bay Cross-Connect	●	○
		●	●
		Yes	Yes
	Single Jumper (Cross-Connect Length)	Yes (4.5m)	Yes (4.5m)
	On-frame Splicing	Yes	Yes
	Off-frame Splicing	Yes	Yes

Telect IC



Legend: Good ○ Better ● Best ●

Figure 16 - ADF Comparisons

		Telect XI	Telect IC
Cable Management		≥30 mm	≥30 mm
	Horizontal Trough Area (in ²)	28.5	13.5
	Exposed Cable at Service Aisle	None	None
	Port Isolation (Port Isolation, Small Form Factor) LC	Maximum of 8 (12) LC	Maximum of 8 (12) LC
	Cable Motion	<i>Invisimanage</i> ™ Complete Managed During Movement	<i>Invisimanage</i> ™ Complete Managed During Movement
Physical Features		215	215
	Earthquake Rating	Certified	Certified
	Flammability (All V0 Plastics)	Yes	Yes
	Circuit Designation (in ² /termination)	2.0	2.0
	Laser Radiation Protection	Integrated Beam Stop Preventing Direct Laser Exposure	Integrated Beam Stop Preventing Direct Laser Exposure

1.5 Specifications

1.5.1 Weight

Weights vary among ADF Panels and modules. The following are approximate weights for ADF XI ETSI bays.

- Main ADFs
 - In Box: 365 lbs (166 kg)
 - Installation (w/o modules): 215 lbs (97.6 kg)
- InterBay Storage Panels
 - In Box: 260 lbs (118 kg)
 - Installation: 110 lbs (50 kg)
- ADF Modules (w/o Cabling)
 - In Box: 25 lbs (11.4 kg)
 - Installation: 20 lbs (9.1 kg)

1.5.2 Overall Dimensions

ADF Cross-Connect/Interconnect ETSI Bays

- Main ADF
Width: 660 mm (26 inches)
Height: 2186 mm (86 inches)
Depth: 595 mm (23 inches)
- Interbay Storage Panel
Width: 300 mm (12 inches)
Height: 2186 mm (86 inches)
Depth: 595 mm (23 inches)

Cross-Connect/Interconnect North American Bays

- Main ADF
Width: 24 inches (600 mm)
Height: 84 inches (2134 mm)
Depth: 24 inches (610 mm)
- Interbay Storage Panel
Width: 12 inches (300 mm)
Height: 84 inches (2134 mm)
Depth: 24 inches (610 mm)

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Chapter 2: Applications

Advanced Distribution Frame (ADF) Systems

This section covers fundamental cross-connection and interconnection applications using ADF XI bays. Other applications are possible. Some applications may be better suited for the ADF IC bays, depending on access to, routing, and density of cabling.

2.1 Cross-Connect - IFC to NEs

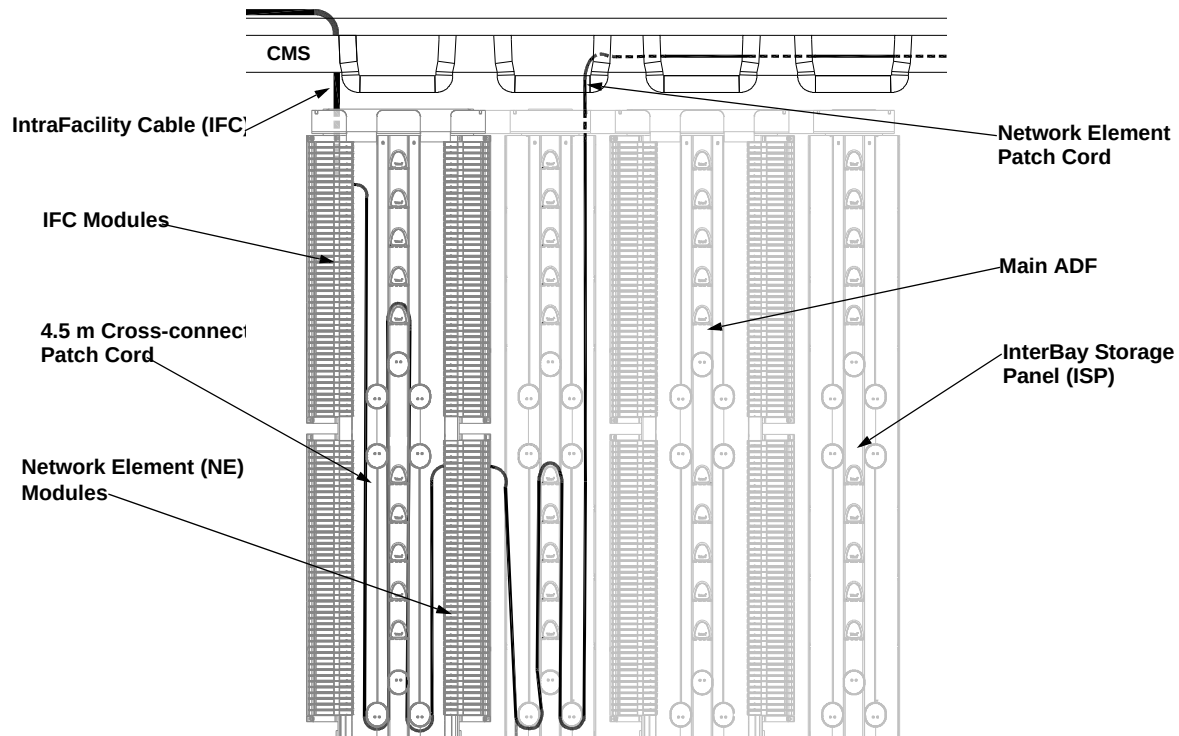


Figure 17 - Cross-Connect - IFC to NEs

Fundamentals of this cross-connect are as follows:

- IFC (IntraFacility Cable) modules are available for either the right or left side of the Main ADF bay.
- IFC comes in from ladder racking (or from floor) and is broken out and presented to the back side of IFC modules.
- NE (Network Element) modules should be installed opposite associated IFC modules.
- InterBay Storage Panel (ISP) is required with NE modules.
- Patch cords from NE's come into ISP from CMS (Cable Management System) and are presented to the back side of NE modules; the excess is stored on the ISP.
- 4.5 m patch cords cross-connect IFC fiber to NE fiber, with cable stored on the Main ADF bay.

- Additional ADF bays can be added to the line-up but should maintain IFC and NE module orientation.

2.2 Cross-Connect - NEs to NEs

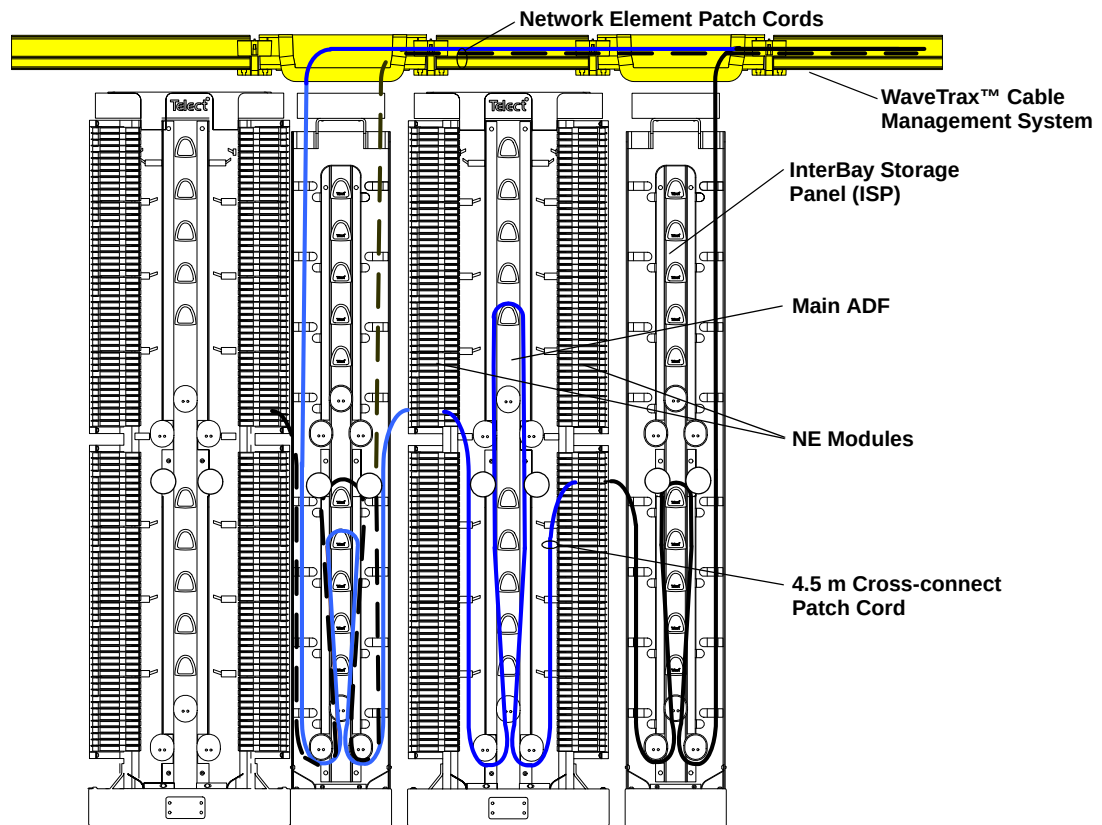


Figure 18 - Cross-Connect - NEs to NEs

Fundamentals of this cross-connect are as follows:

- NE (Network Element) modules are available for both sides of the Main ADF.
- When cross-connecting NE's, the system requires an ISP (InterBay Storage Panel) on both sides of the Main ADF bay.
- NE patch cords are routed from the CMS (Cable Management System) into the ISP and presented to the back side of an adapter; the same process is done on the other side of the Main ADF bay.
- A 4.5 m patch cord cross-connects the two NE fibers and the cable is stored on the Main ADF bay.
- The ISP is used so that NE's can be routed in both directions in the ISP.

2.3 Cross-Connect - IFC to IFCs

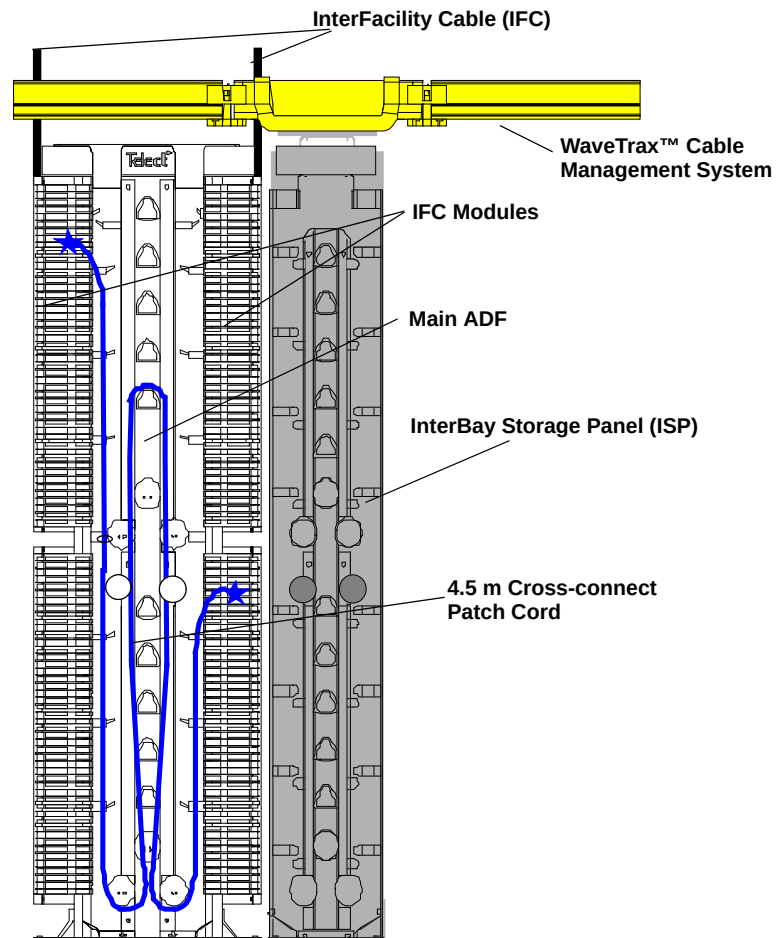


Figure 19 - Cross-Connect - IFC to IFCs

Fundamentals of this cross-connect are as follows:

- IFC (IntraFacility Cable) modules are mounted on both sides of the Main ADF bay.
- The IFC comes in from ladder racking (or from floor) and is broken out and presented to the back sides of IFC modules.
- 4.5 m patch cords cross-connect IFC fiber to IFC fiber, with cable stored on the Main ADF bay.

2.4 Interconnect - IFC to IFC

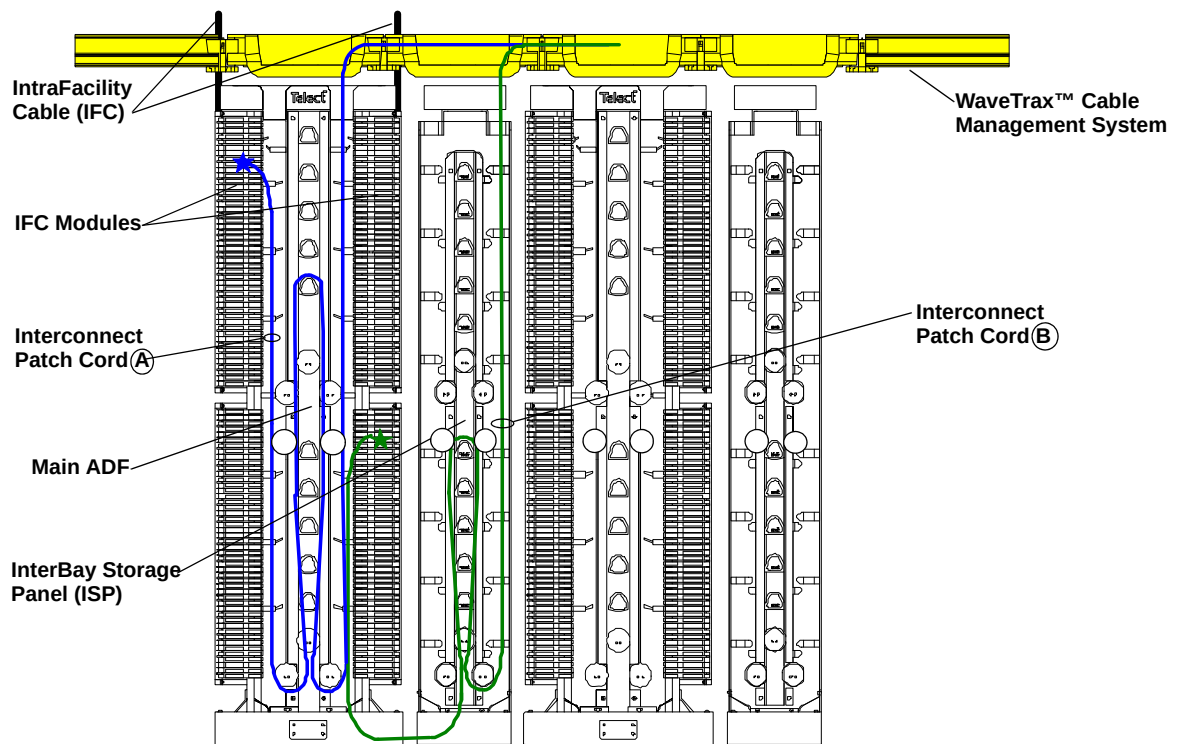


Figure 20 - Interconnect - IFC to IFC

Fundamentals of this cross-connect are as follows:

- IFC (IntraFacility Cable) modules (only) are mounted on both sides of the Main ADF bay.
- The IFC comes in from ladder racking and is broken out and presented to the back side of the IFC modules.
- On one side of the Main ADF bay, the patch cords are routed from the CMS (Cable Management System) into the frame and presented to the front side of an adapter; excess patch cord length is stored on the Main ADF bay (Interconnect Patch Cord A).
- You may use an ISP (InterBay Storage Panel) to manage the patch cords on the opposite side of the Main ADF bay.
- Patch cords are routed into the ISP from the CMS and presented to the front side of the adapter; this requires the patch cords to be routed through the bottom trough (Interconnect Patch Cord B).

2.5 Interconnect - NEs to NEs

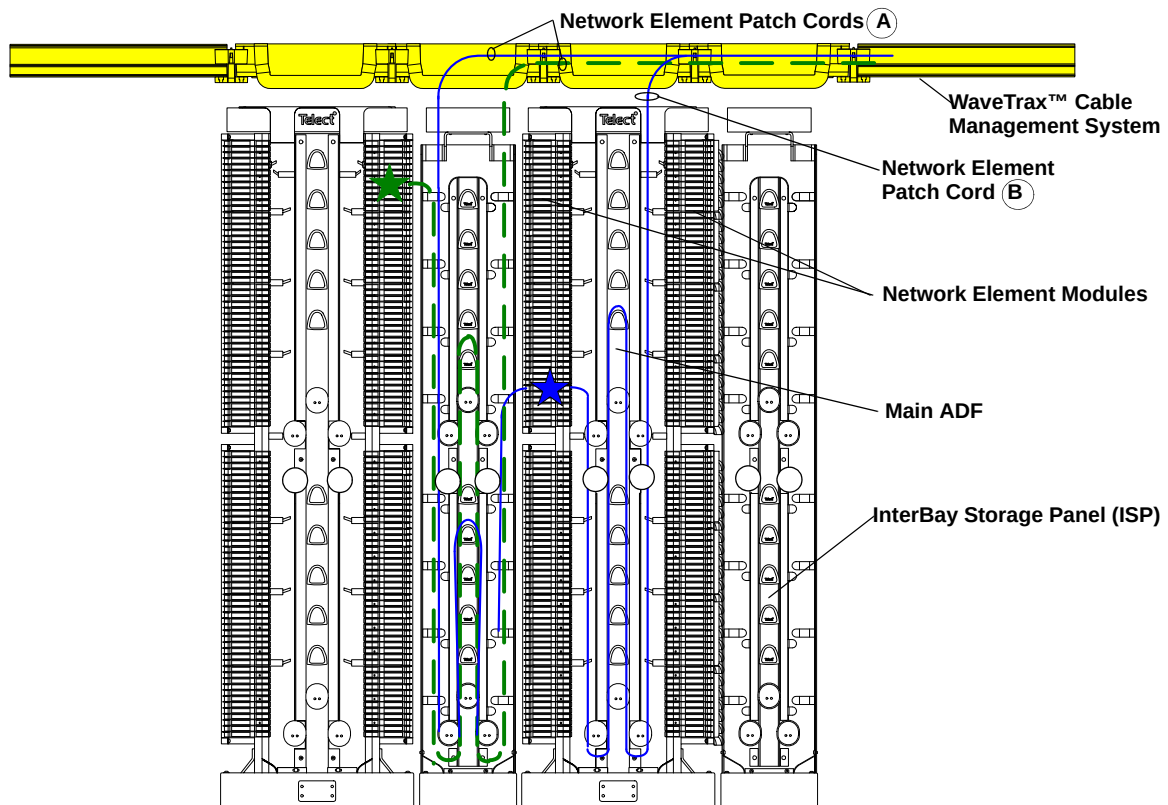


Figure 21 - Interconnect - NEs to NEs

Fundamentals of this cross-connect are as follows:

- NE (Network Element) modules (only) are mounted on both sides of the Main ADF bay.
- ISPs (Interbay Storage Panels) are required.
- Back-side NE patch cords come in from the CMS (Cable Management System) into the ISP and are presented to the back side of the NE modules (Network Element Patch Cords A).
- Front-side NE patch cords are routed into the frame from the CMS and presented to the front side of the adapter (Network Element Patch Cord B).

2.6 Interframe Cross-Connecting

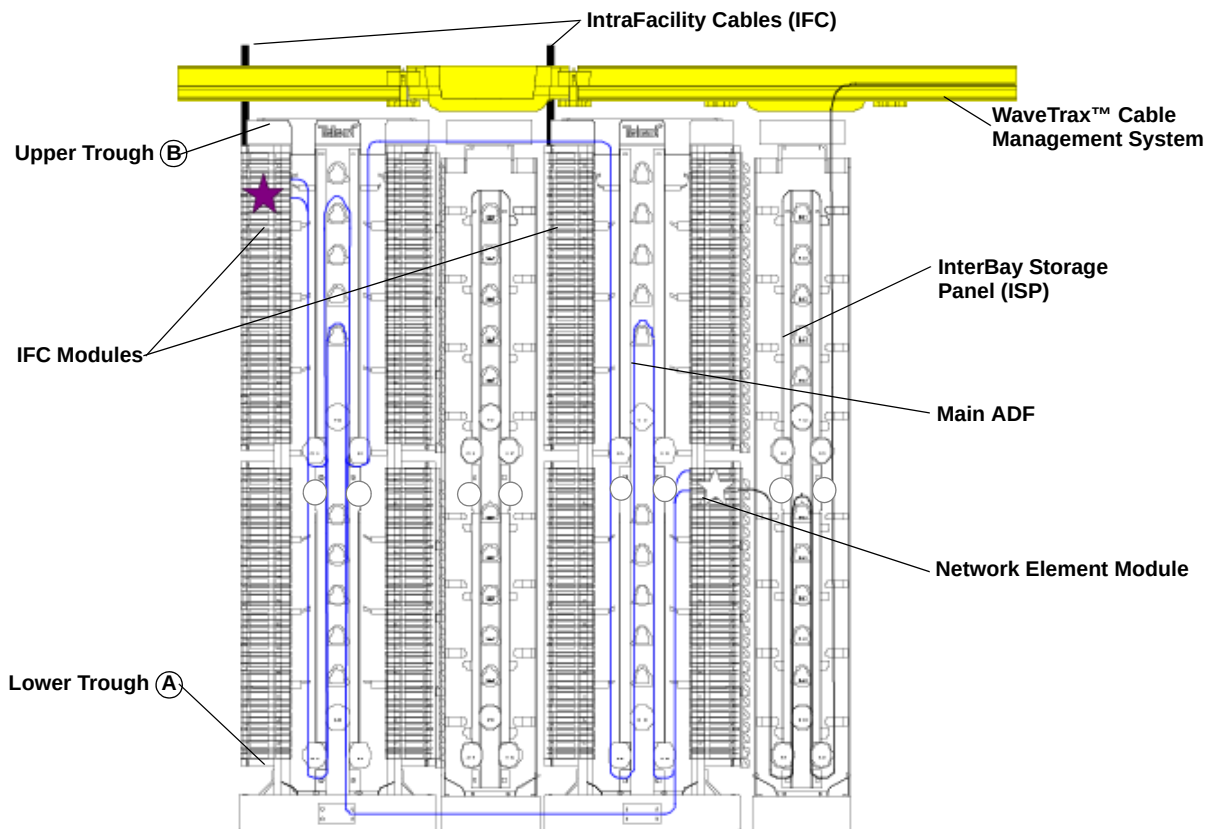


Figure 22 - Interframe Cross-Connecting

- Interframe connections can be done in two ways:
 1. by routing the patch cord between the two frames via the Lower Trough (A)
 2. by routing the patch cord through the Upper Trough (B)
- The excess cross-connect patch cord length is stored in the Main ADF bays.
- For NE (Network Element) patch cord isolation and safety, storing cross-connect patch cords in the ISP (InterBay Storage Panel) is **not** recommended.
- Connect the origin, then route to the cross-connecting point. Store any extra cable on the Main ADF bay nearest the second connection.

2.7 Cross-Connect - IFC to NEs - Working/Protect

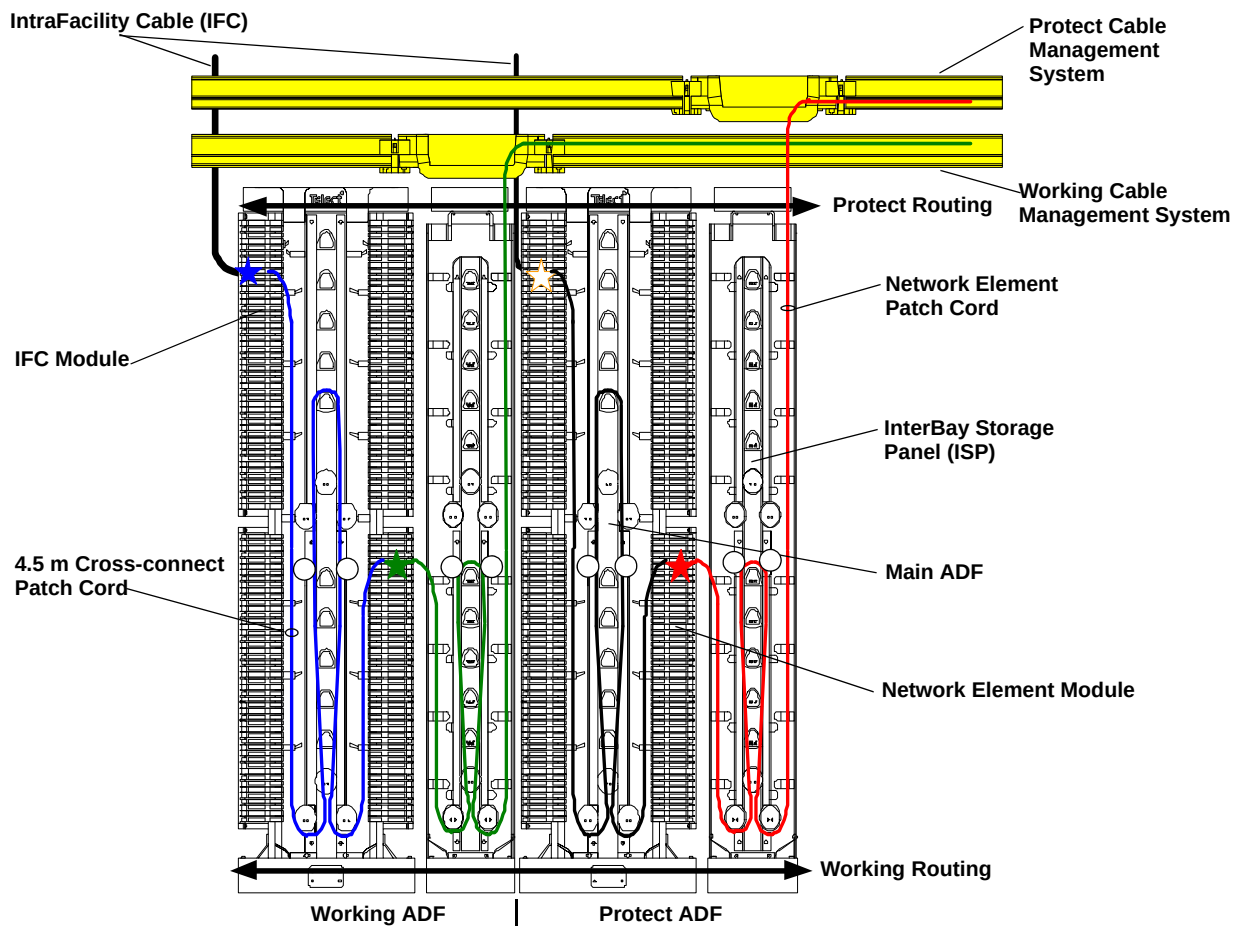


Figure 23 - Cross-Connect - IFC to NEs - Working/Protect

Separate lineups provide complete isolation of fibers inside the Main ADF bay. When that cannot be done, the following are options:

- IFC (IntraFacility Cable) and NE (Network Element) modules should be laid out so that an ISP (InterBay Storage Panel) contains only one type of fiber — Working or Protect.
- Working and Protect interpanel cross-connects should be separated in the top and bottom troughs.

2.8 Cross-Connect - IFC to NEs - Working/Protect - Standalone

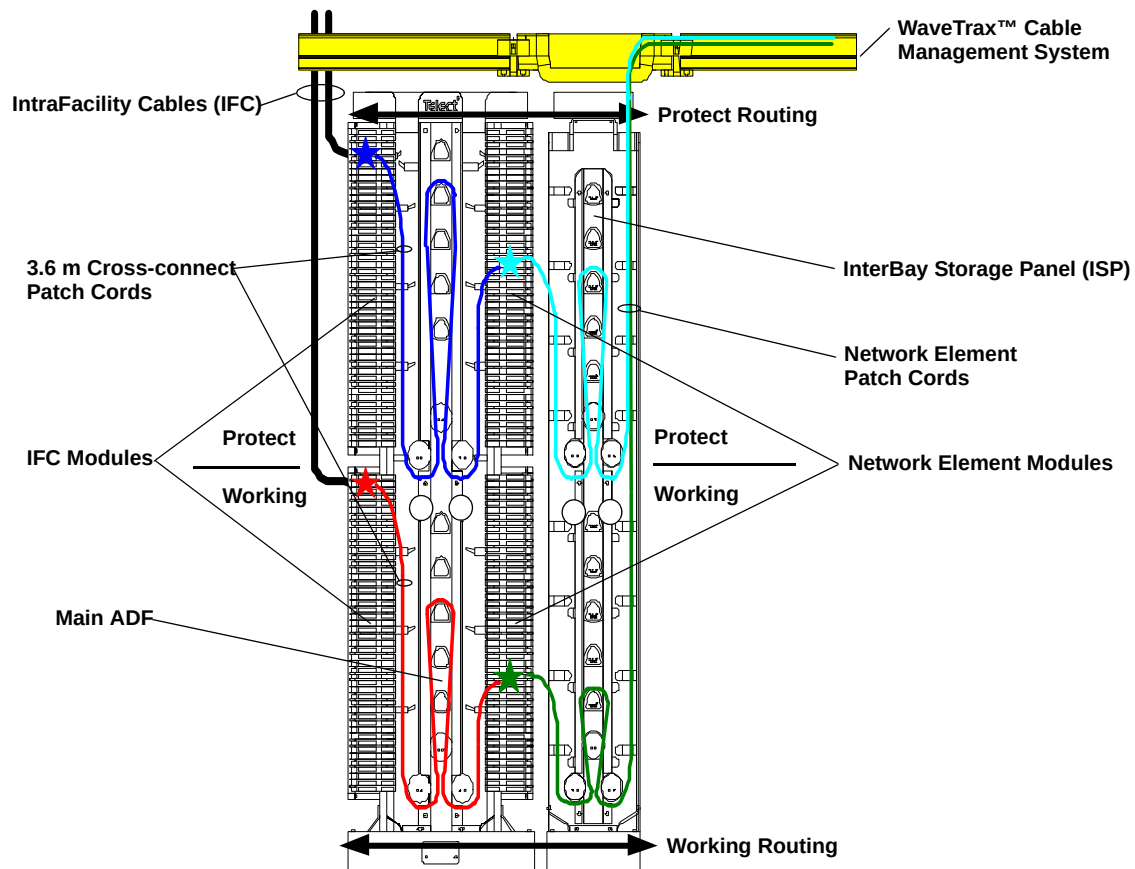


Figure 24 - Cross-Connect - IFC to NEs - Working/Protect - Standalone

This option is only for a standalone Main ADF bay:

- IFC (IntraFacility Cable) modules should be installed on the side opposite the ISP (InterBay Storage Panel).
- Working fibers are either on the top or the bottom half of the Main ADF bay. Protect fibers are placed in the opposite half.
- Interpanel routing should use the upper or lower trough corresponding to the module location.
- 3.6-m cross-connect patch cords — shorter cable lengths are required in working/protect applications).

Chapter 3: Frame Installation

Advanced Distribution Frame (ADF) Systems

3.1 Installation Considerations

! ALERT

ALERT! Only qualified technicians may install and maintain this product.

ALERT! Do not stand on utility or fiber cable troughs at the base of ADFs.

3.1.1 Location & Space

The Main ADF and InterBay Storage Panel require space in front and at rear for access to cabling. Refer to Figure 25, below. Choose a location in compliance with local operating company requirements.

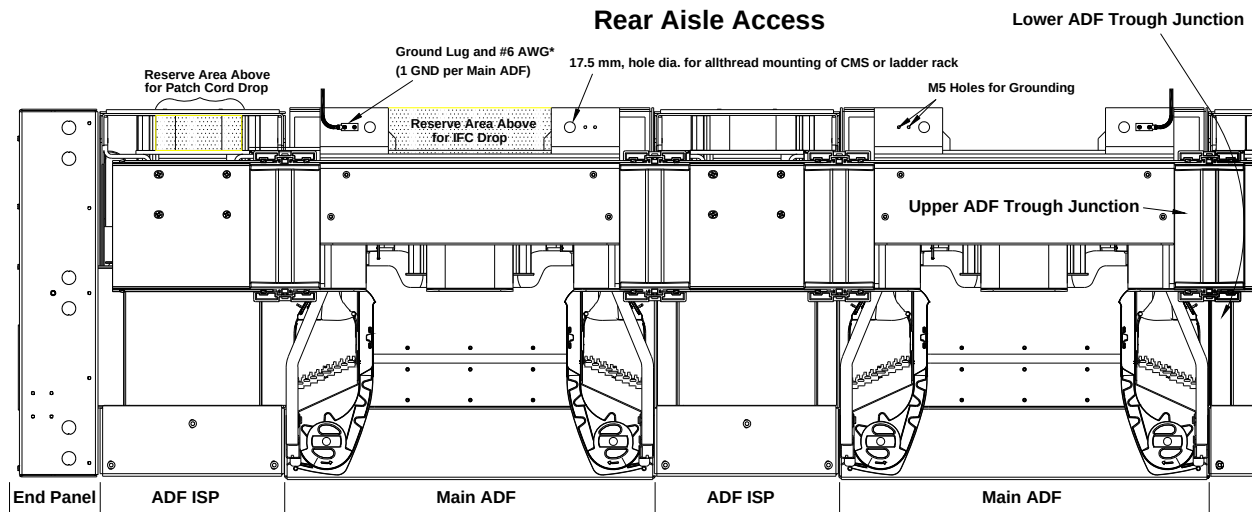


Figure 25 - Installation Location

3.1.2 Tools & Equipment

The following tools are required for installing ADFs:

- 18-mm (or 23/32 in.) masonry bit
- 40 N•m torque wrench with a 19 mm box or open end. (A 19 mm socket can be used if the socket is at least 54 mm deep.)
- Broadblade screwdriver (~8 mm or ⁵/16 in. blade width)
- Horizontal or plumb level (optional)

- Isolation pad (if required at base of frame)
- #1 or #2 Phillips screwdrivers (screwdrivers for cross-recessed screws) for attaching lower trough junctions

3.2 Inspection

Telect is not liable for shipping damage.

Keep the container until you have checked equipment operation. If you experience any kind of problem, call Telect's Customer Service Department. Use the original, undamaged container if you are instructed to return the Main ADF, InterBay Storage Panel, or ADF Modules to Telect.

If a shipping container is damaged, keep it for the carrier's inspection. Notify the carrier and call Telect's Customer Service Department at 1-800-551-4567 or 1-509-926-6000.

3.3 Main & InterBay Storage Panel Installation

3.3.1 Unpacking Main & InterBay Storage Panels

Main ADF container: 42 in. x 36 in. x 96 in. (107 mm x 92 mm x 244 mm). Approximate loaded weight: 365 lbs (166 kg).

InterBay Storage Panel container: 42 in. x 36 in. x 96 in. (107 mm x 92 mm x 244 mm). Approximate loaded weight: 260 lbs (118 kg).

The container for either the Main or InterBay Storage Panel contains

- Pre-assembled ADF
- Template for mounting ADF to a floor
- Trough cover
- User manual
- One 8-in. upper trough junction
- One lower trough ADF junction
- Tie plate and M6 x 12 bolts to secure adjacent ADFs in the lineup

If necessary, use a forklift to move the "Main ADF" and/or "InterBay Storage Panel" container to the installation site. Open the container and check the contents against the packing list. Contact Telect if anything is missing.

3.3.2 Installing Main & InterBay Storage Panels Directly on a Concrete Floor

Each Telect Anchoring Kit (sold separately) contains concrete anchors, threaded studs, and fastening hardware to anchor and secure the base of one Main or InterBay Storage Panel to a concrete floor. Refer to “Bays and Accessories” on page 61 of this manual for part numbers, or see telect.com for ordering information.

Procedure steps:

3. Use the template included with the ADF to lay out a 4-hole pattern on the concrete floor. (Use the outermost locations for anchor holes.)

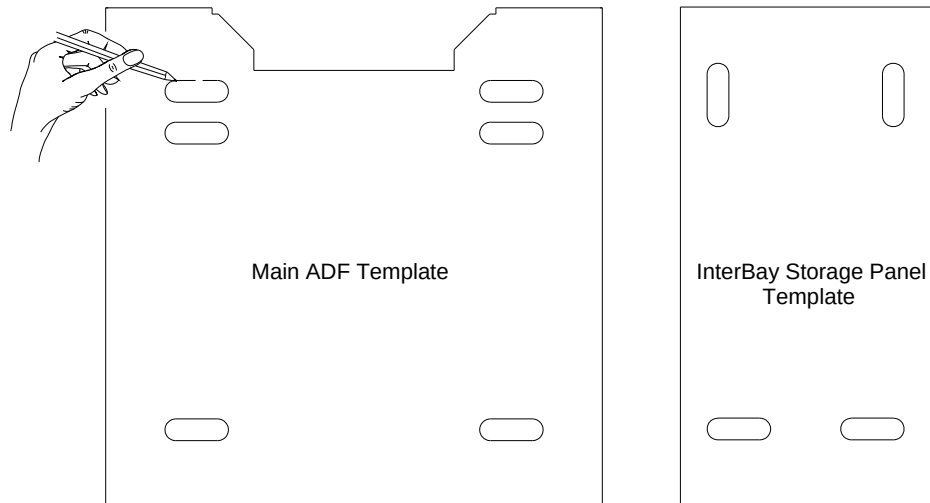
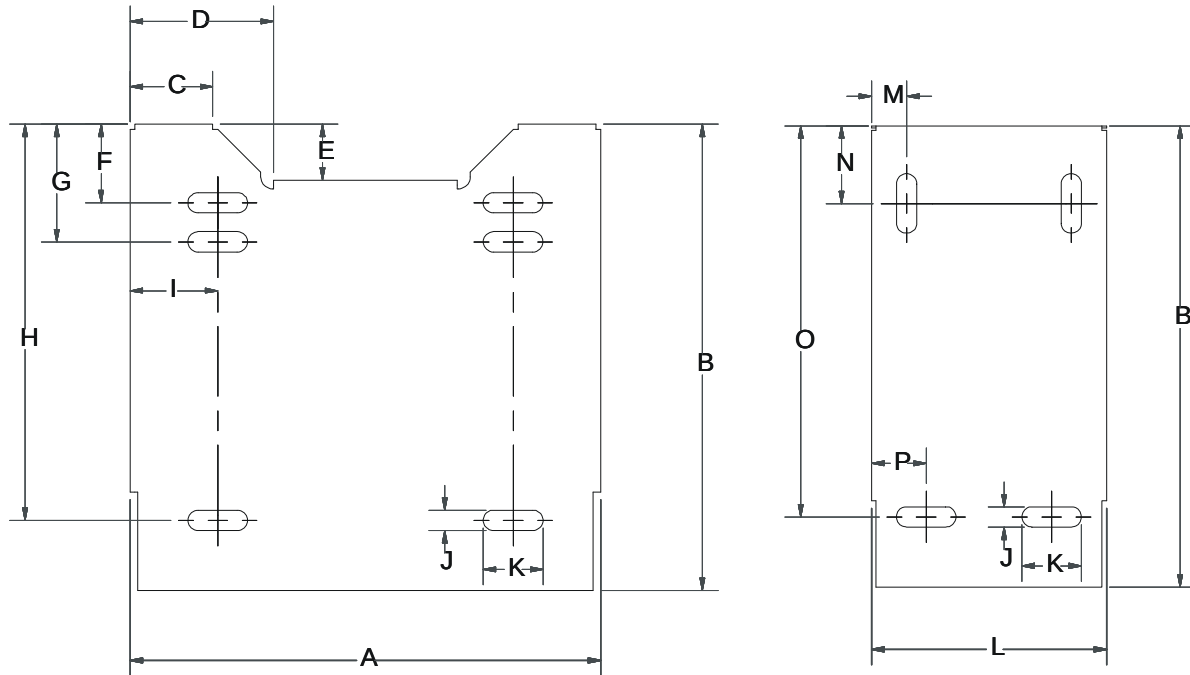


Figure 26 - ADF and InterBay Storage Panel Installation Template

4. Mark and then drill four holes for each Main Panel and ISP.

- Follow the instructions supplied with the anchor kit(s). Shim as required and use the isolation pad and bushings (if required) to electrically isolate the panels from the floor structure.



Main ADF

InterBay Storage Panel

Figure 27 - ADF and InterBay Storage Panel Footprints

This procedure is complete.

3.3.3 Table of Footprint Dimensions

	ETSI XI			NA ADF XI		
	Main ADF	ISP	End Panel	Main ADF	ISP	End Panel
A	600 mm			26 in.		
B	600 mm	600 mm		24 in.	24 in.	
C	105 mm			4.1 in.		
D	180 mm			7.2 in.		
E	72 mm			3.4 in.		
F	100 mm			4.5 in.		
G	150 mm			6.5 in.		
H	505 mm			20.4 in.		
I	112 mm			5.6 in.		
J	26 mm	26 mm		1 in.	1 in.	
K	76 mm	76 mm		3 in.	3 in.	
L		300 mm			12 in.	
M		45 mm			1.9 in.	
N		100 mm			4.6 in.	
O		500 mm			20.3 in.	
P		70 mm			2.8 in.	

3.3.4 Installing Lower Trough Junction

Use M6 screws to attach the Main ADFs to the ISPs.

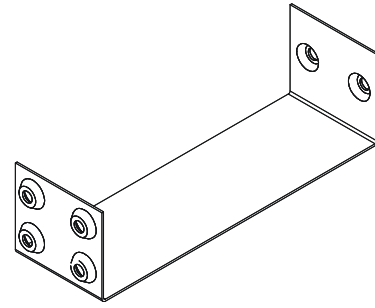


Figure 28 - Lower ADF Junction

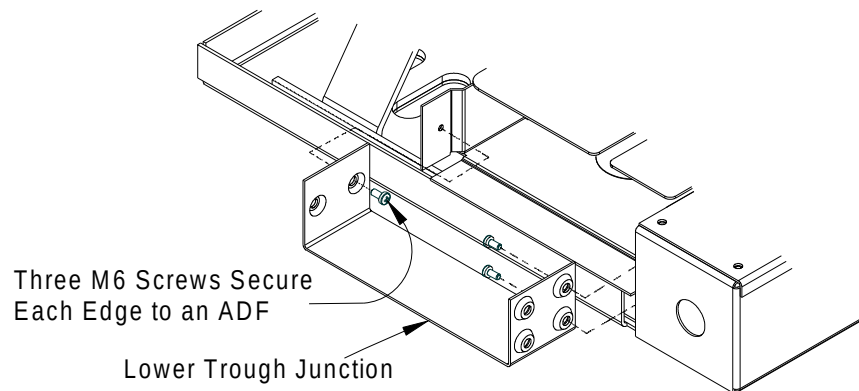


Figure 29 - Lower Trough Junction Being Secured to the Main ADF XI

3.3.5 Installing Upper Trough Junction on ADF XI Bays

Connect the adjacent 8-in. upper ADF troughs using the plastic junction provided.

The upper ADF troughs are sandwiched between the upper and lower halves of this two-part, 8-in. junction. The prongs on the bottom of the upper half snap and lock into corresponding holes in the lower half.

NOTE: If you need to remove the junction, press in on the two pairs of prongs on the underside of the junction to separate the two halves.

3.3.6 Securing ADF to the Lineup

A tie plate with two pairs of slotted holes and M6 x 12 bolts are provided to tie adjacent ADFs in the line up. Leave the bolts finger-tight until the complete lineup is assembled, then tighten them all. Follow the instructions included with the end panels for attaching the end panel to the last ISP in the lineup.

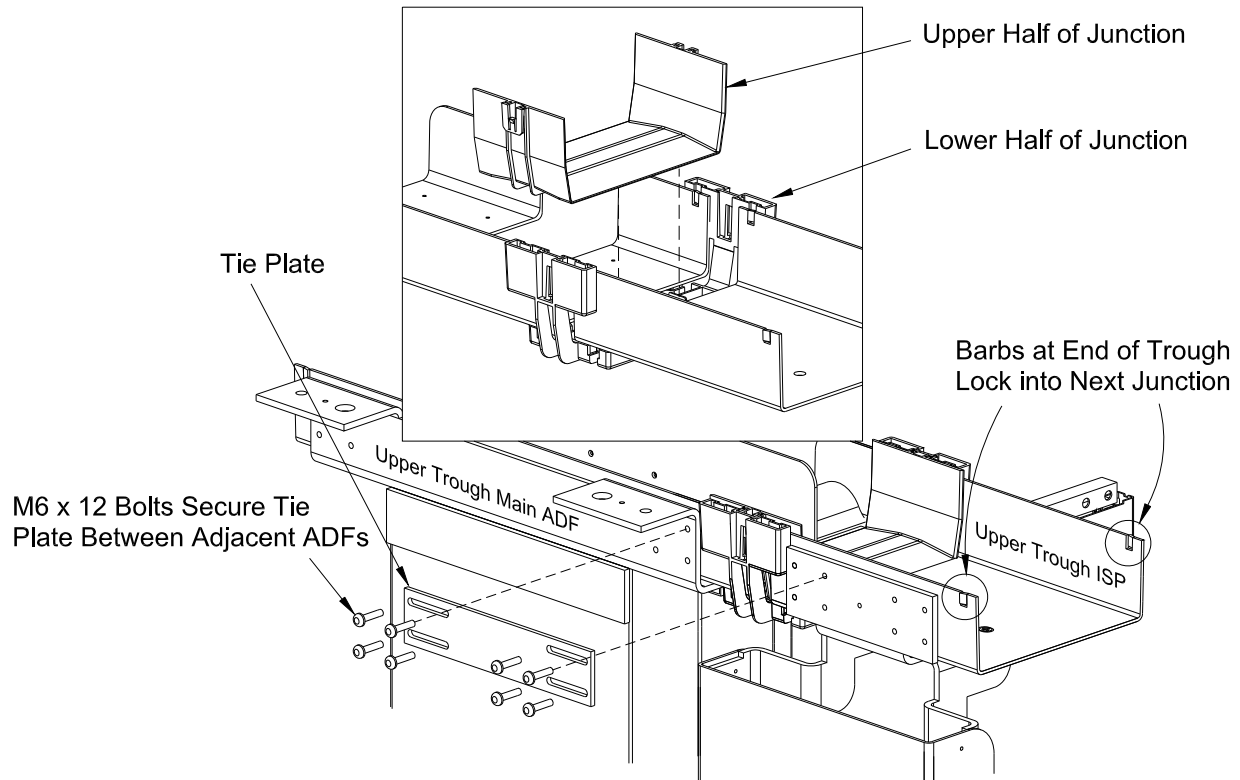


Figure 30 - Rear Corner View of an ADF XIs in an ADF Lineup

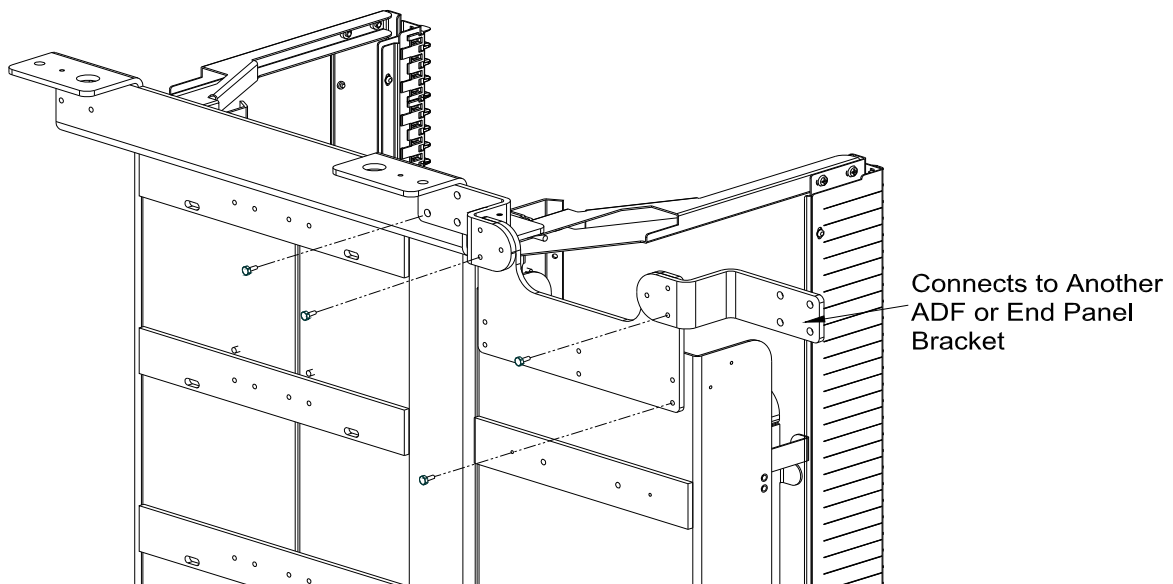


Figure 31 - Rear Corner View of ADF ICs in an ADF Lineup

3.3.7 Installing Rear Cable Tie-Down Bars

Using the provided hardware, install the rear cable tie down bars in the desired locations. For Top Cable Feed configurations, please refer to Figure 32, below, for the installation recommendation. For Bottom Cable Feed configurations, please refer to Figure 33, “Recommended Bottom Feed Configuration” on page 35, for the installation recommendation.

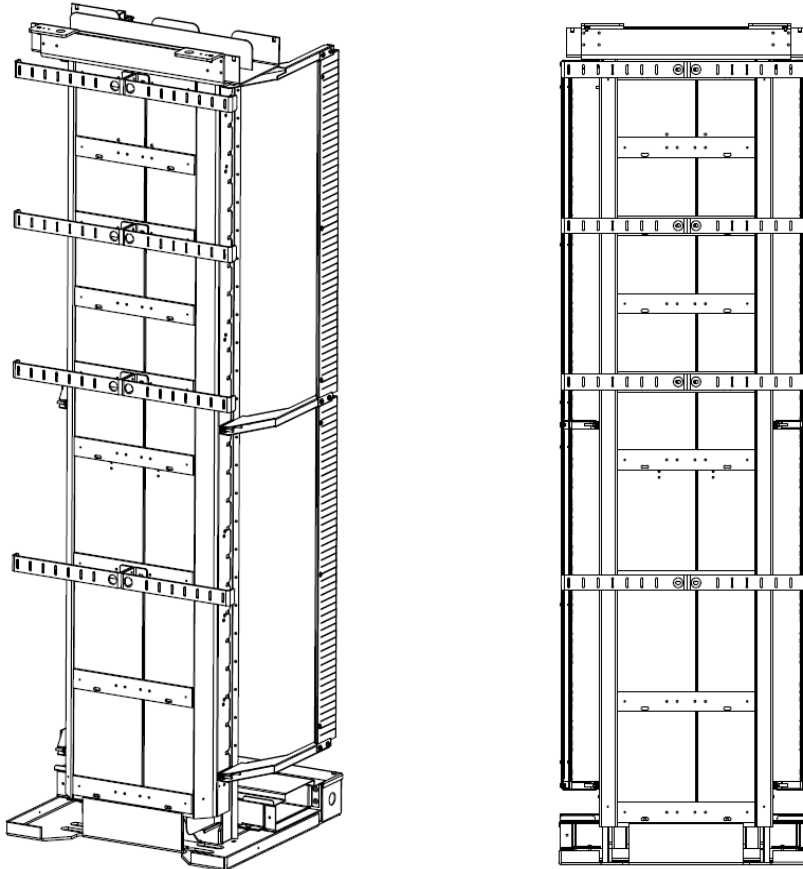


Figure 32 - Recommended Top Feed Configuration

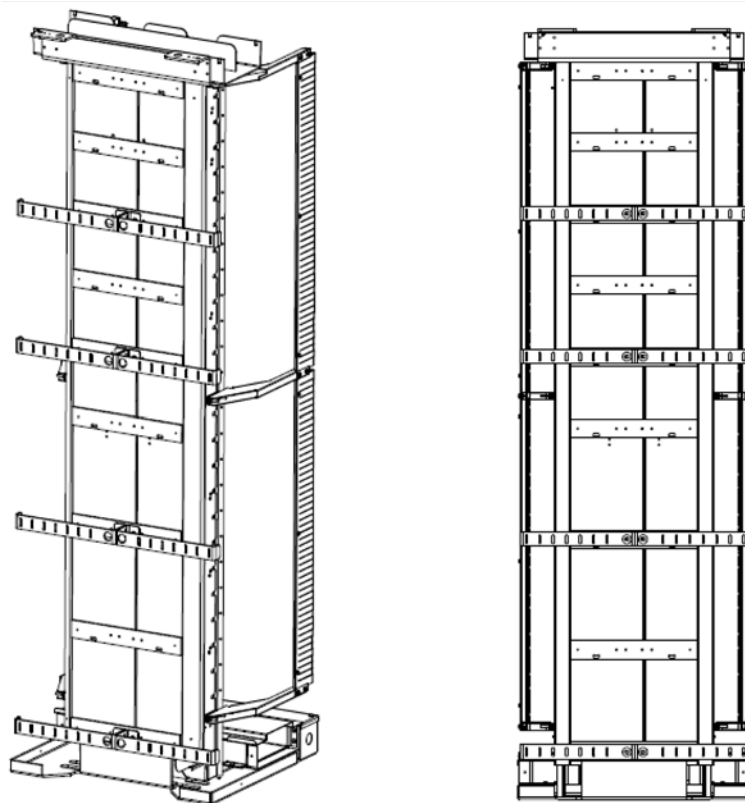


Figure 33 - Recommended Bottom Feed Configuration

3.3.8 Installing Cable Management System (CMS)

Install the Cable Management System (CMS) as instructed by the manufacturer. If desired, use the large (17.5 mm diameter) holes at the top of the ADFs to connect the CMS to the lineup.

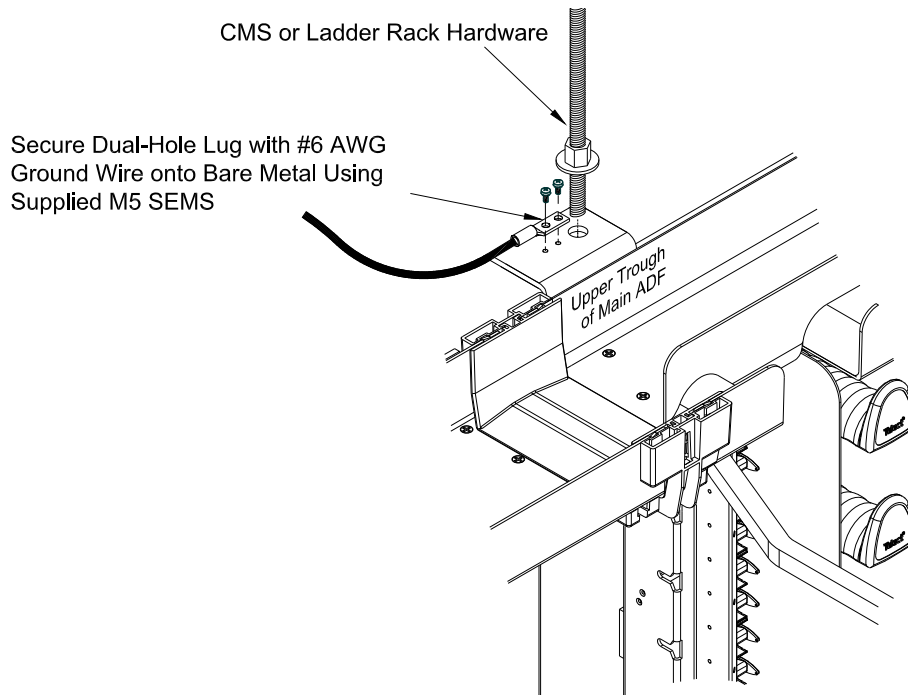


Figure 34 - Connect CMS to Main ADF XIs

3.3.9 Grounding ADF

The bracket at the top of the Main ADFs contains two tapped holes to mount an approved dual-hole lug with a #6 AWG (4.75 mm) grounding wire or strap. Refer to Figure 34.

Telect recommends using one ground wire or strap per Main ADF. Grounding wires or straps are not provided with the ADF.

3.3.10 Securing ADF Lineup

After all ADFs of a lineup are installed, torque their tie-plate bolts to 80 N•m.

3.3.11 Wiring Facility Power

Facility power (AC) can be run into and through the electrical raceway at the foot of ADF XI and IC lineups.

Contact your local power regulatory agency for details regarding the number and size of wires/ cables, type of receptacles and cover plates, conduit, and the like.

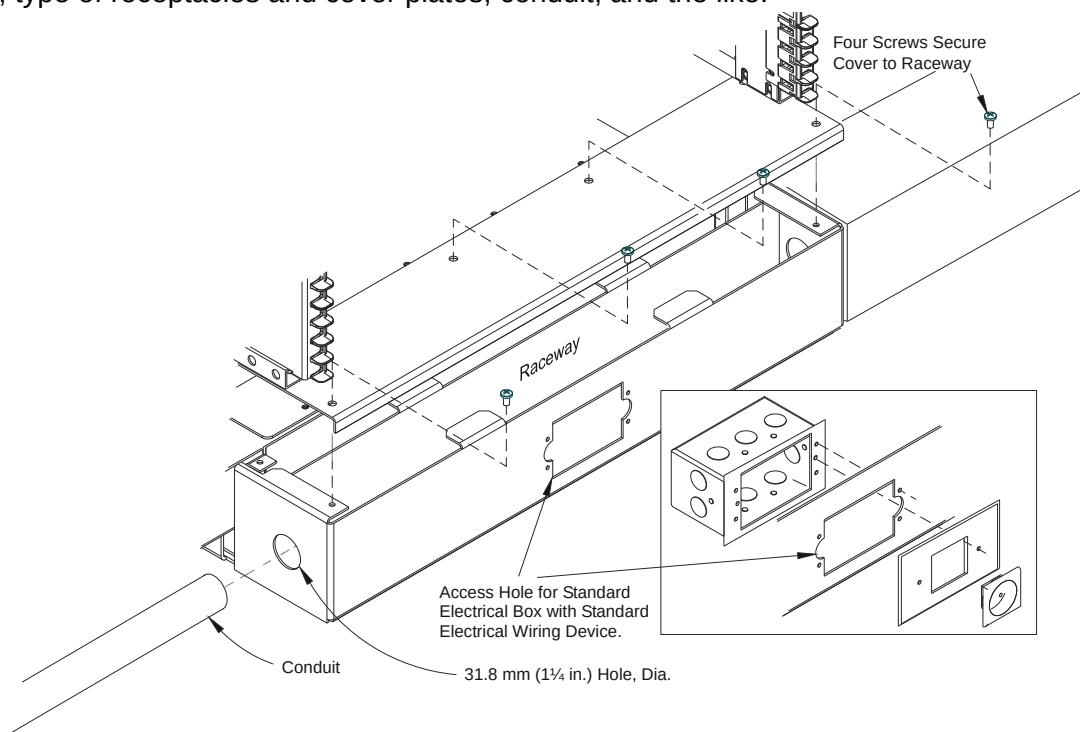


Figure 35 - Electrical Raceway (Front of Base) on ADF XI and IC Lineups

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Chapter 4: Module Installation

Advanced Distribution Frame (ADF) Systems

4.1 Installation Considerations

ALERT

ALERT! Only qualified technicians may install and maintain this product.

ALERT! Do not stand on utility or fiber cable troughs at the base of ADFs.

4.1.1 Pre-Cabled Vs. Uncabled ADF Modules

The modules can be ordered with or without pre-cabled breakout areas:

- If intrafacility cable (IFC) modules are ordered with multi-fiber cabling, then either the module will be pre-cabled or, if the cabling is too long or bulky, the module and cabling will be packed in separate containers for installation by the user. If the module is pre-cabled, the 900 μ m cables from the clamped multi-fiber cable at the rear of the module are fed through the breakout area to the far side of the adapters in the trays.
- If network element (NE) modules are ordered with patch cords, network element cabling, the cables will be packaged separately from the module for installation by the user.

4.1.2 Tools & Equipment Required

Phillips #2 and #3 screwdrivers (for cross-recessed screws).

4.2 Inspection

Telect is not liable for shipping damage.

Keep the container until you have checked equipment operation. If you experience any kind of problem, call Telect's Customer Service Department. Use the original, undamaged container if you are instructed to return the tray or Module to Telect.

If the shipping container is damaged, keep it for the carrier's inspection. Notify the carrier and call Telect's Customer Service Department at 1-800-551-4567 or 1-509-926-6000.

4.3 Unpacking an ADF Module

NOTE: A "typical" ADF module and container without cabling is approximately 7 in. x 10 in. x 22 ⁵/₈ in. (179 mm x 250 mm x 576 mm) and weighs about 20 lbs (9 kg). An ADF module with an indefinite amount of cable length and fiber count can weigh much more.

The container for the ADF module without cabling contains the following:

- Pre-assembled ADF module with installation tray cover
- M6 screws for securing the module to the Main ADF
- ADF Module Installation Sheet

If necessary, use a forklift to move a pre-cabled ADF module to installation site. Open the container and check the contents against the packing list.

4.4 Installing an ADF Module to a Main ADF

The Main ADF contains a set of keyways and M6 threaded holes to receive and secure each module. The modules contain guide pins on the side that fit these keyways; M6 screws are provided to secure the module to the ADF.

Telect recommends the following:

- Use two people to route cable and secure the module to the ADF.
- Begin installing modules in the position farthest from the incoming cable direction. If incoming cable comes from above, begin installing modules from the bottom and then progress upward. If incoming cable comes from below, begin installing modules from the top and then progress downward.
- Place an installation cover on the top tray of the module below the one being installed. The cover will prevent damage to the tray and its cabling when installing the next module above it. If desired, the installation cover can remain in place after installation.

To install ADF modules on a Main ADF, proceed as follows:

1. If the module is pre-cabled,
 - a. Move the spool and module to the front of the ADF.
 - b. Unstrap the module from the spool.
 - c. Pull the free end of the intrafacility cable from the reel and direct it up (or down) through the cable management guides on the rear of the ADF. Route the full reel of cable to its termination point before mounting the ADF module to the frame.

NOTE: As shipped from the factory, module trays have been rotated (pivoted “inward” on their bracket) to make installation easier. For a right-side tray module, all trays should be pivoted clockwise in relationship to a top-down view of the module. For a left-side tray module, all trays should be pivoted counter-clockwise.
2. Refer to Figure 36 on the following page, and proceed as follows:
 - a. Make sure the trays on the module are pivoted inward about 15° during the following step.
 - b. Slip guide pins on the side of the module into the keyways on the ADF Frame, then close and latch the trays on the latch bar.

- c. Fasten with M6 screws near the front. Torque the M6 screws to approximately 5 N•m.

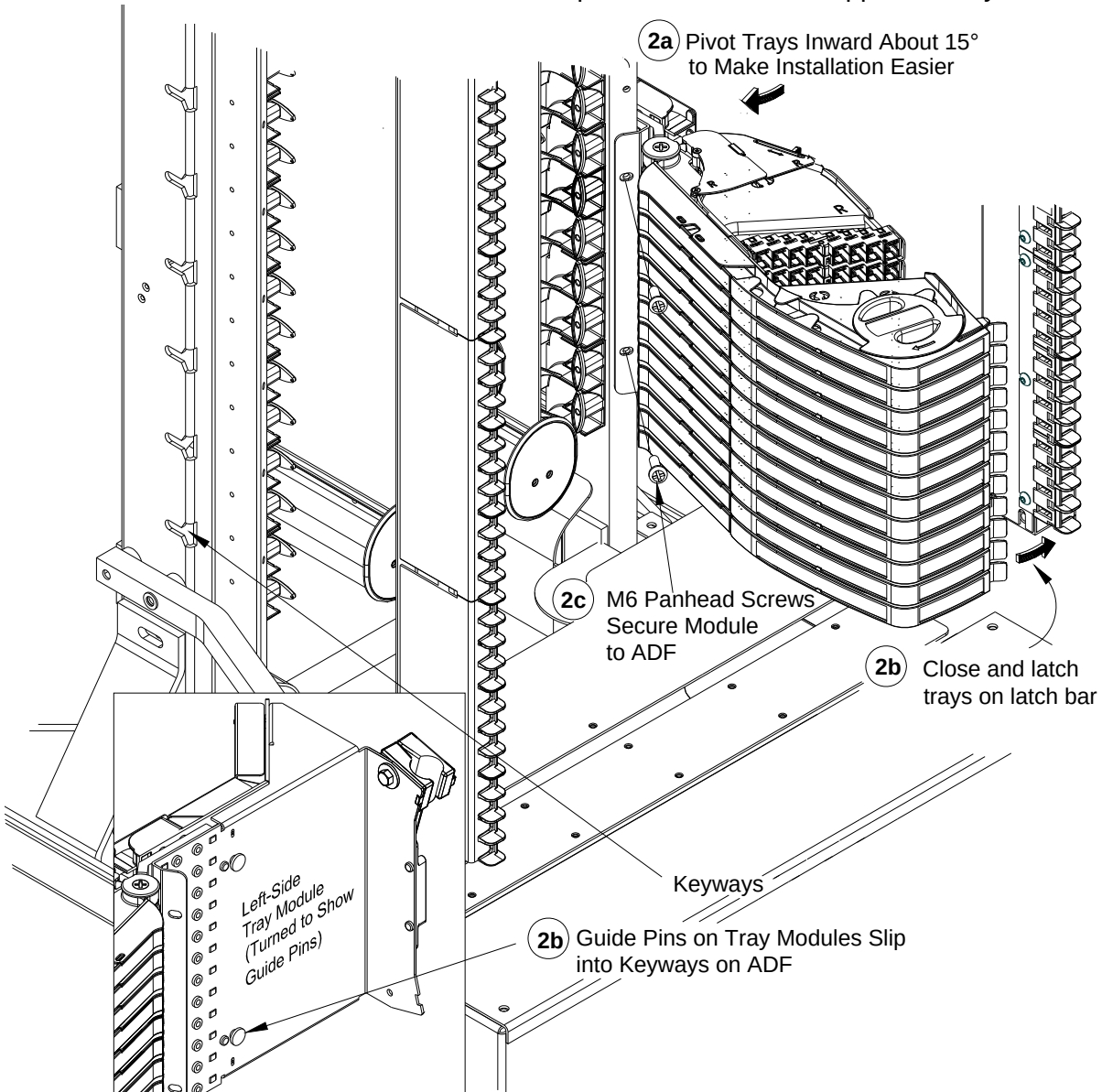


Figure 36 - Installing a Module on a Main ADF

3. The trays should latch easily. If the trays are not properly aligned, adjust the latch bar as follows:

NOTE: Latch bar adjustment may be necessary only during installation of the first module (with trays) in a quadrant. After the first module with trays is in place, all subsequent modules installed in that quadrant will align automatically.

- Make sure all trays are rotated out, away from the latch bar.
- Loosen the six adjustment screws that hold that latch bar — there are four latch bars, one per quadrant per Main ADF — to the frame extender. See Figure 37, following.

- c. Move the latch bar up or down so module trays slide smoothly into latch bar.
- d. With trays in the latched position, retighten the three outer adjustment screws, then swing the trays back out, and then finally retighten the three inner screws.

NOTE: For further details on installing an ADF Module to the main frame, please refer to Telect Part Number 137828, *Advanced Distribution Frame Module Installation and Fiber Routing Guide*. You can find this document by searching on the part number or name on Telect.com.

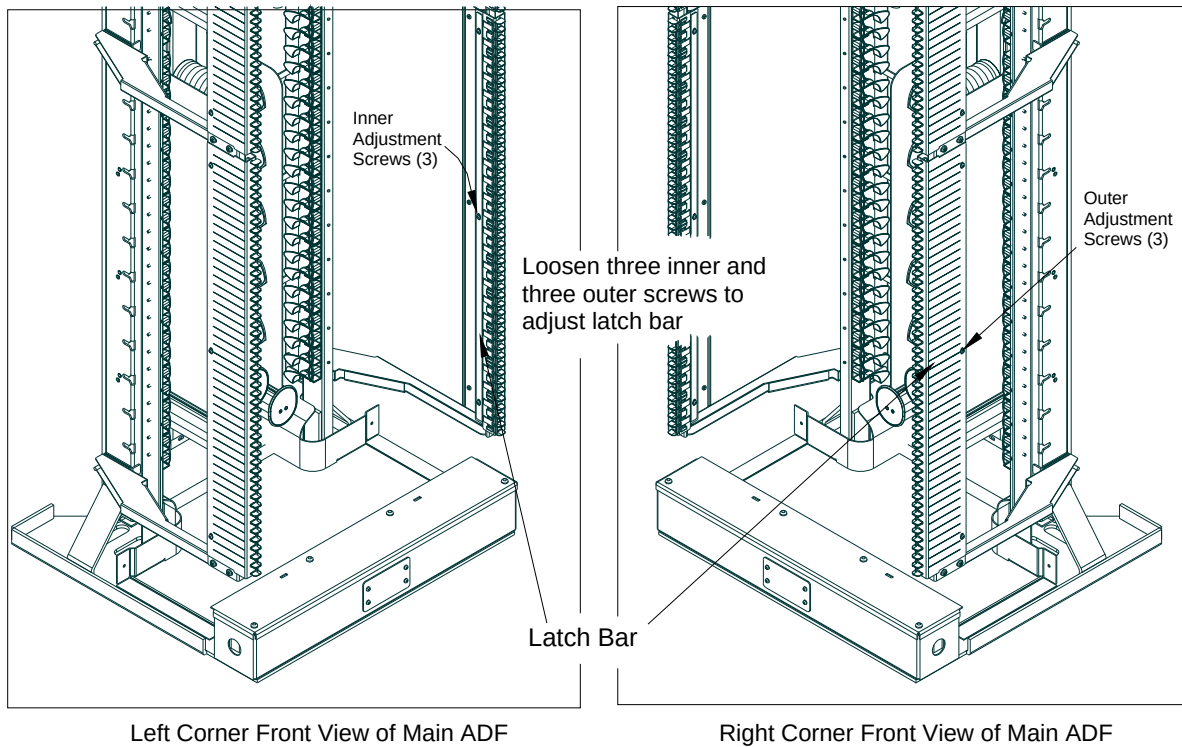


Figure 37 - Adjusting Latch Bars (ADF Module Not Shown)

Chapter 5: Outboard Cabling

Advanced Distribution Frame (ADF) Systems

WARNING

WARNING! Fiber cables transmit invisible infrared light. To avoid eye damage or blindness, never look directly into fibers or connectors.

ALERT

ALERT! Do not stand on utility or fiber cable troughs at the base of ADFs.

Outboard cabling deals with installing intrafacility and network element cabling at the rear of the ADF module — near the rear corners of Main ADF bay. Interconnection and cross-connection via patch cords is done in the interior area of Main ADF bays, between the right- and left-side ADF modules.

Outboard cabling is covered in detail in the manual accompanying the modules (Telect Part Number 137828, *Module Installation and Fiber Routing Guide*). The outboard cabling instructions in this section apply in general to all intrafacility cable (IFC) and network element (NE) modules.

5.1 Intrafacility Cable to Uncabled IFC Module

The intrafacility cable must have at least 37 in. (940 mm) of exposed, connected, 900- μ m strands beyond the jacketed intrafacility cable.

To connect intrafacility cable to an IFC module, refer to Figures 38 and 39, and proceed as follows:

1. At the rear of the IFC module, attach the jacketed end of the riser cable to the clamp located at the rear of the module.
2. Pull the plunger to release and remove the cover from the breakout area.

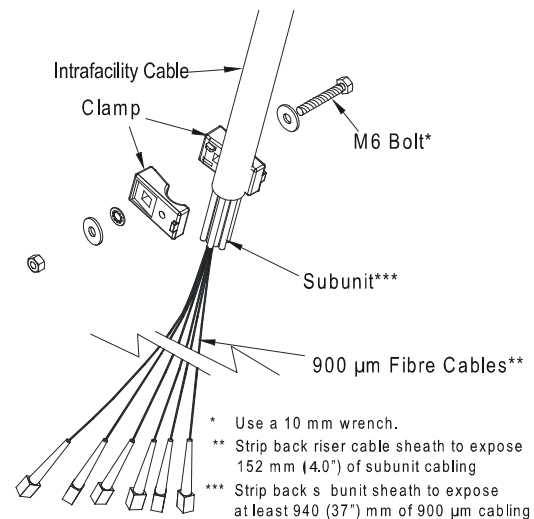


Figure 38 - Intrafacility Clamp and Cable

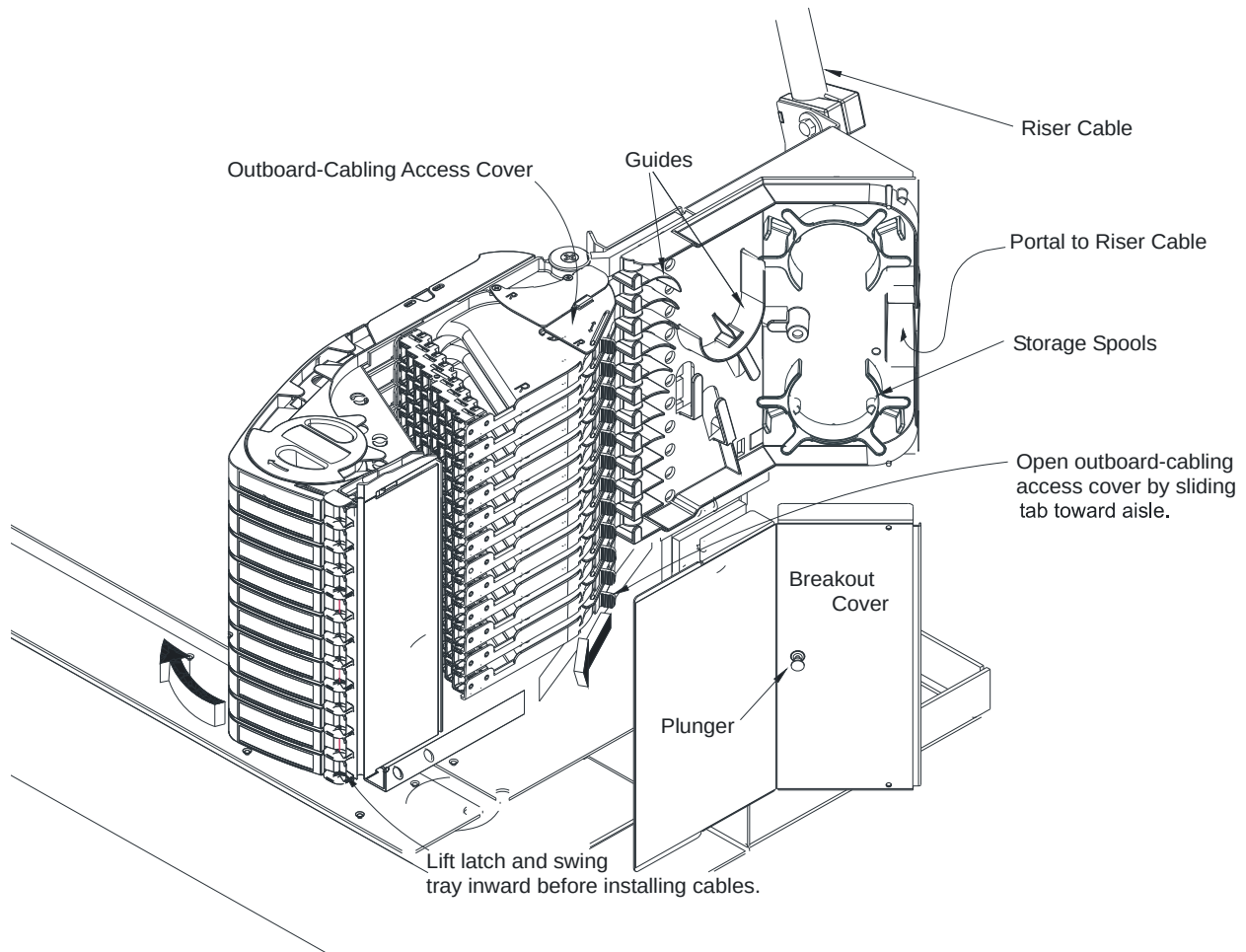


Figure 39 - Riser Cabling to Uncabled IFC Module

3. For the first tray, open the outboard-cabling access cover by sliding the finger tab toward the front aisle.

4. As an aid in cabling the first tray, open several or all trays above the first tray. To open trays, pull slightly on the tray latches and then rotate the trays toward the inboard area of the ADF.
5. Secure the connector of the first 900- μ m strand to the adapter.

NOTE: Telect recommends that when installing more than one 900- μ m strand in a tray, start with the adapter closest to the tray's inboard raceway.

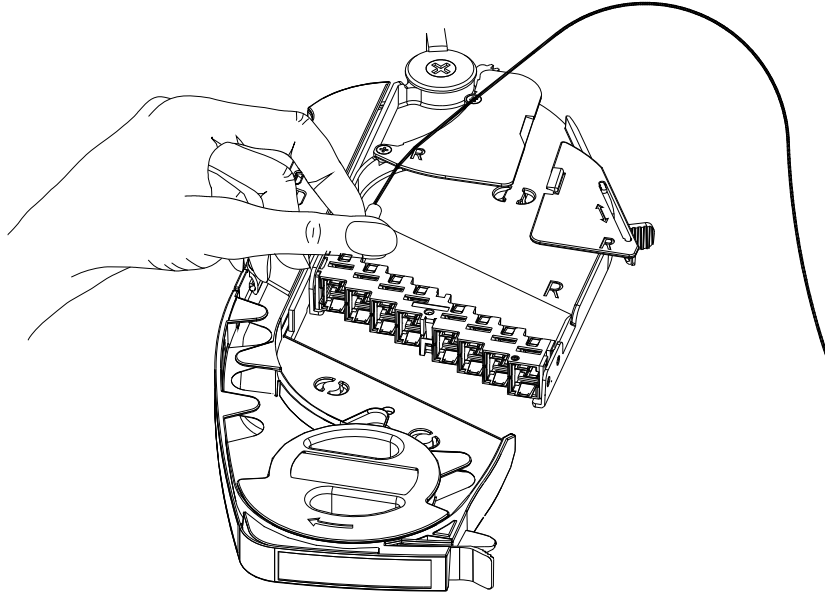


Figure 40 - Securing Connector to Adapter

6. Fit the first strand through the tray's access cover and route into the breakout area.

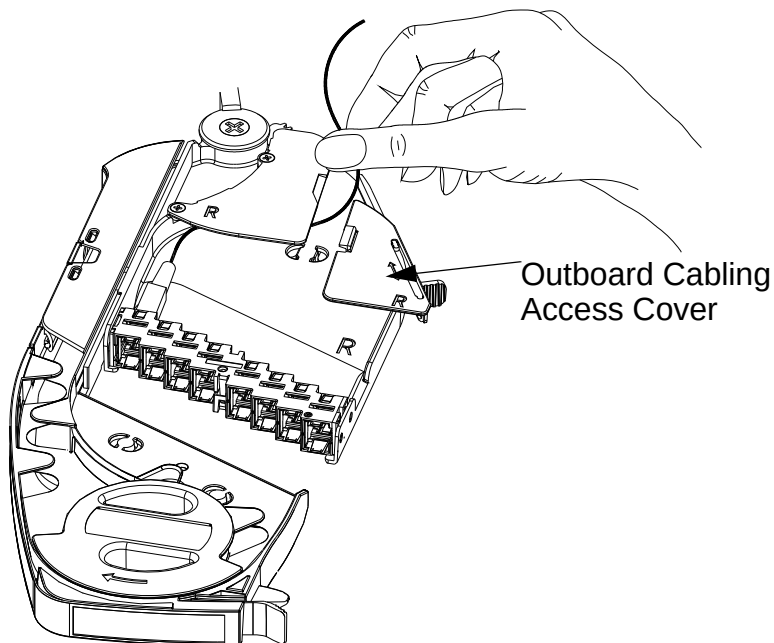


Figure 41 - Routing Cable to Breakout Area

7. Carefully fit excess cabling into guides, around storage spools, and out portal, as shown in Figure 42.

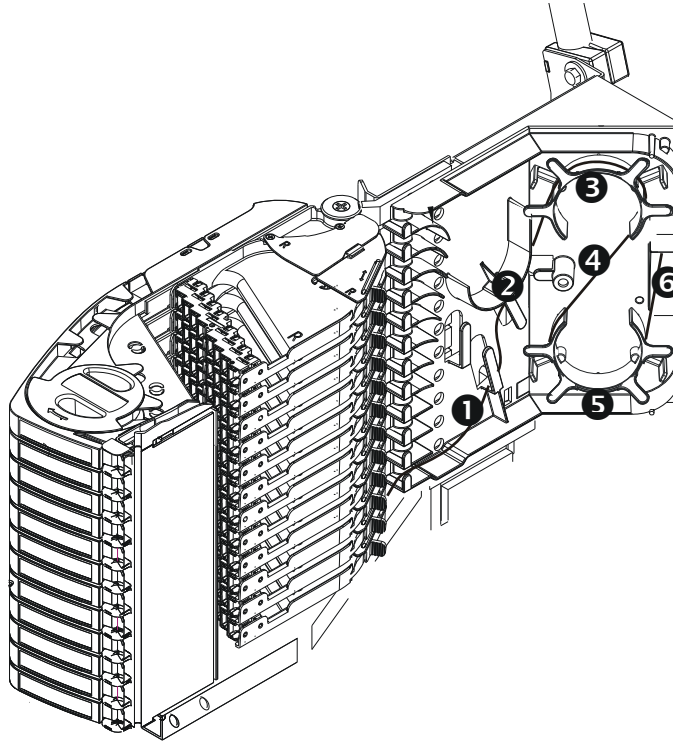


Figure 42 - Excess Cable Routing

8. When finished with one tray, slide closed the outboard cabling access cover shown in Figure 41.
9. Now close the next tray above and repeat Steps 3 through 8 until all 900- μ m strands from the riser cable are installed.
10. When finished with an intrafacility cable, re-attach the breakout area cover and swing all applicable trays to their latched, home (closed) positions.

NOTE: In general, connect and route all outboard 900- μ m strands from the riser cables before installing any inboard patch cords.

5.2 Network Cabling to Network Element Module

To connect network element cabling to a NE module, proceed as follows:

1. Remove the outboard raceway cover (two screws).

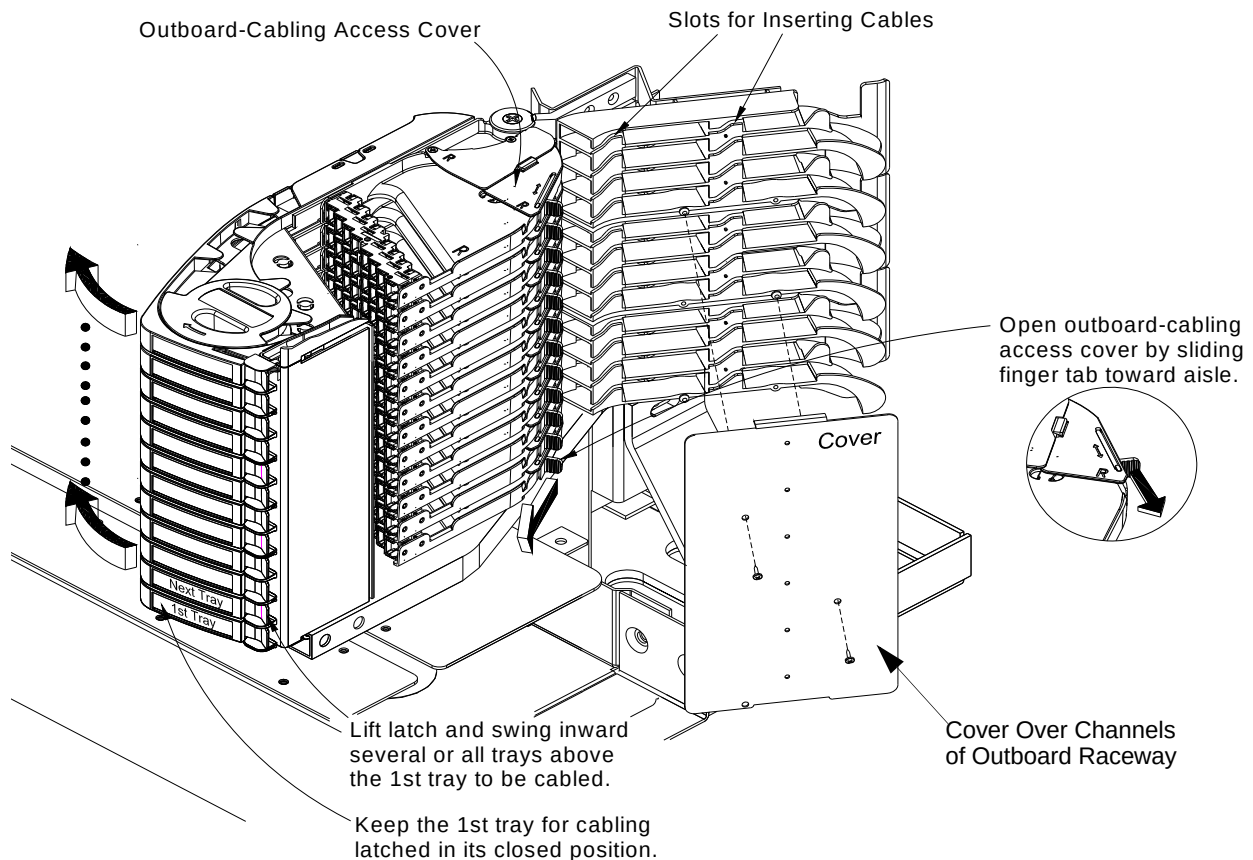


Figure 43 - Network Element Cabling (Example)

2. As an aid in cabling the first tray, open several or all trays above the first tray. (To open trays, pull slightly on the tray latches and then rotate the trays toward the inboard area of the ADF, as shown in Figure 44, on the following page.)
3. For the first tray, open the outboard-cabling access cover by sliding the finger tab toward the front aisle.

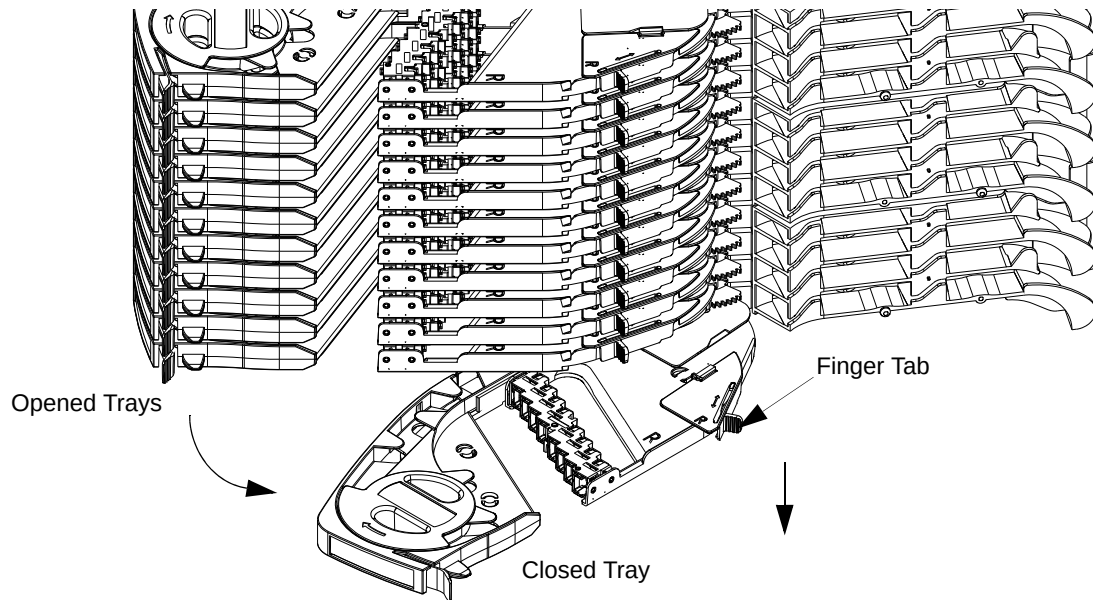


Figure 44 - Opening Trays

4. Secure the connector on the network element cable to the adapter.

NOTE: Telect recommends that, when installing more than one network element cable in a tray, you start with the adapter closest to the tray's inboard raceway.

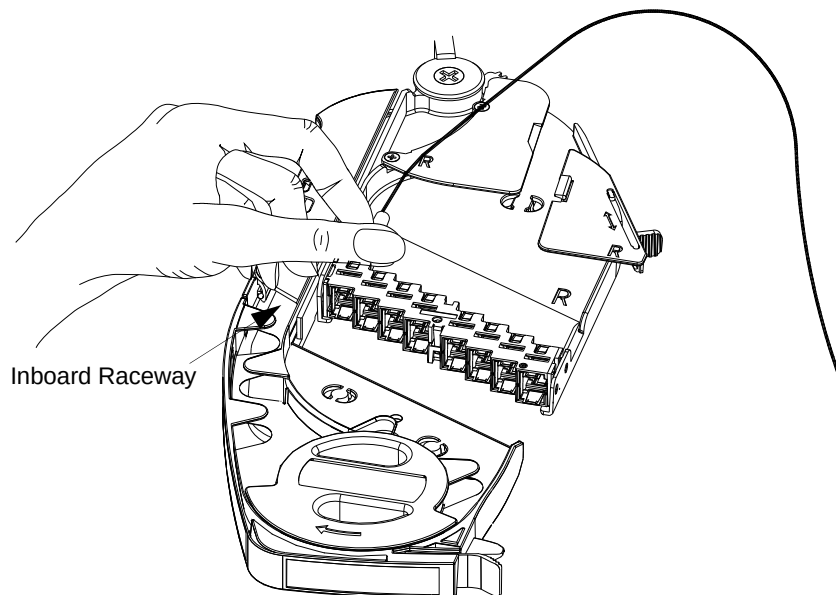


Figure 45 - Securing Connector to Adapter

5. Fit the first cable through the tray's access cover and route into the channel.

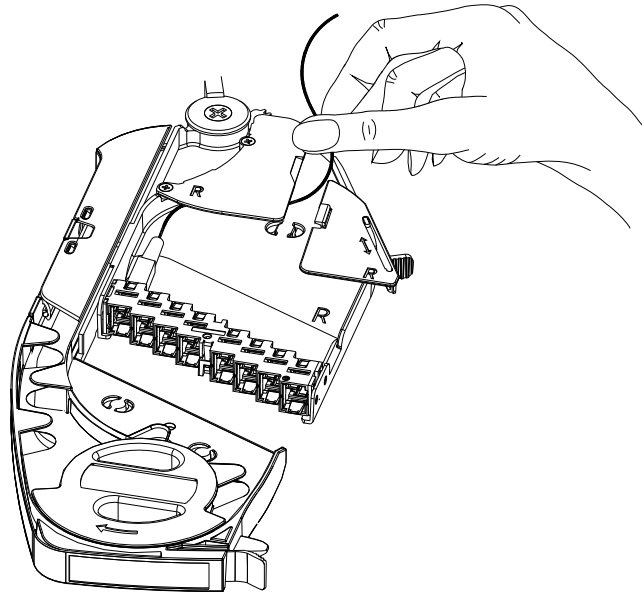


Figure 46 - Routing Cable to Channel

6. Route the cable through the channel and then cascade at the rear of the module, as shown in Figure 47.

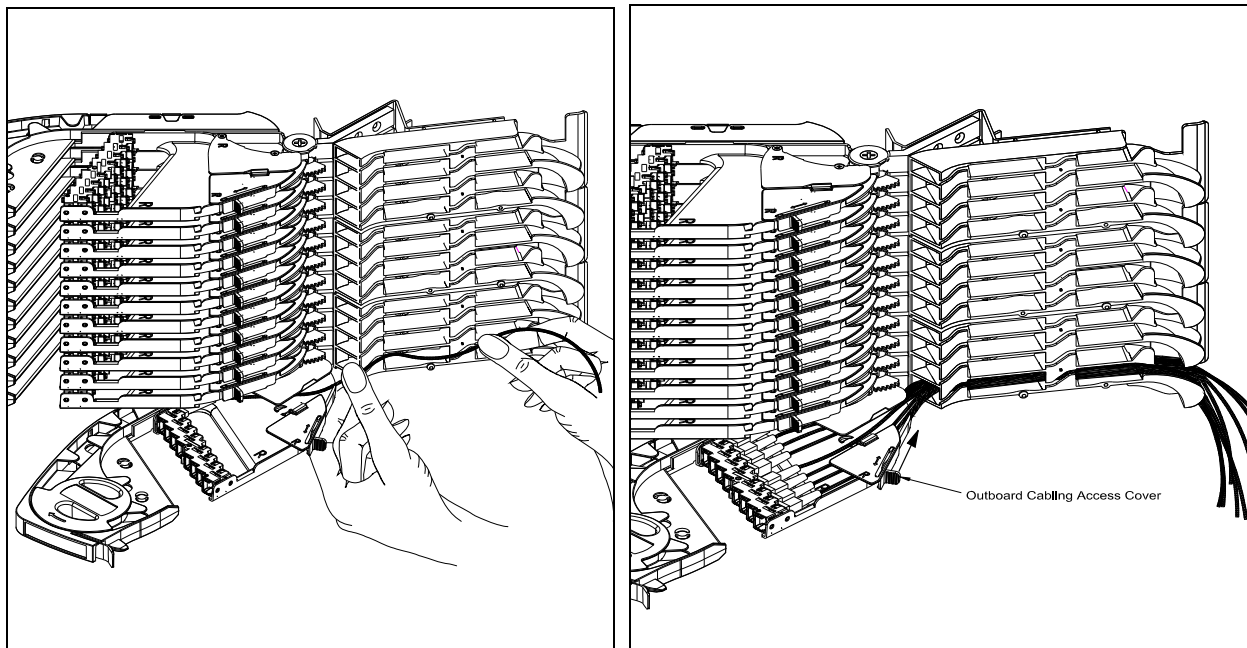


Figure 47 - Cable Routing through Channel to Rear of Module

7. When finished with the first tray, slide the outboard cabling access cover closed.
8. Now close the next tray above and repeat Steps 3 through 7 for the next cable.

9. Route the rest of the network element cabling for that module before re-attaching the outboard raceway cover.

NOTE: In general, connect and route all outboard network element cables before installing any inboard patch cords.

Chapter 6: Inboard Cabling

Advanced Distribution Frame (ADF) Systems

Inboard cabling involves interconnecting riser cables to network elements using patch cords on the inboard side of ADF modules, and cross-connecting network element cables using patch cords on the inboard side of ADF modules.

WARNING

WARNING! Fiber cables transmit invisible infrared light. To avoid eye damage or blindness, never look directly into fibers or connectors.

ALERT

ALERT! Do not stand on utility or fiber cable troughs at the base of ADFs.

6.1 Installing Inboard Cabling

In the following procedure, two important points need to be emphasized:

1. ALWAYS make end connections first and then route cable in troughs, around spools, etc., between those terminations. With Telect's ADF, there is no need to fish cables before making termination connections.
2. ALWAYS route cables very loosely. Leave plenty of slack, especially at or near transition and same-side spools. As more and more cables are added to a cabling scenario, the newly routed cables tend to weigh down the previously routed cables, with the tendency to pull down on the vertical cable runs on both sides of the spools.

Proceed as follows to install interconnect or cross-connect cabling:

Procedure steps:

1. Work with one network element (NE) cable or patch cord at a time. Prepare tray(s) for cabling at both cable ends.

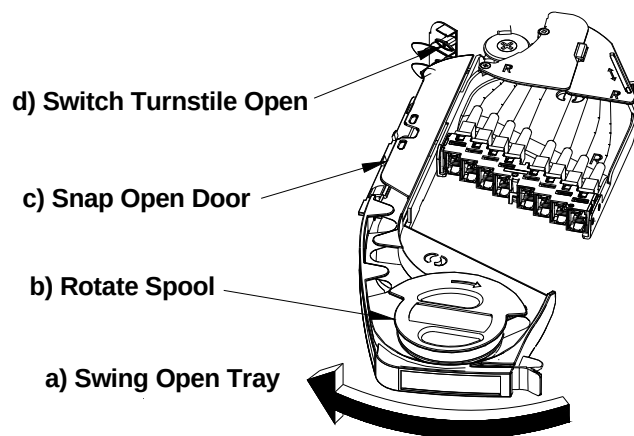


Figure 48 - Cable Preparation

2. Connect the patch cord to the adapter(s). Remember, when cross-connecting, connect the patch cord at both ends before routing cable.

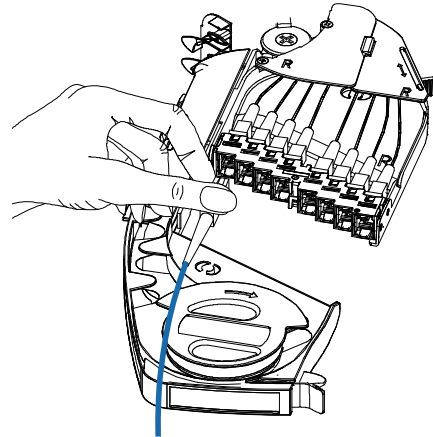


Figure 49 - Connecting Patch Cord

3. Fit the cable neatly around the spool, through the raceway, then into the cascade.
4. Close spool(s), door(s), turnstile(s), and then tray(s).
5. Record termination information on labels.

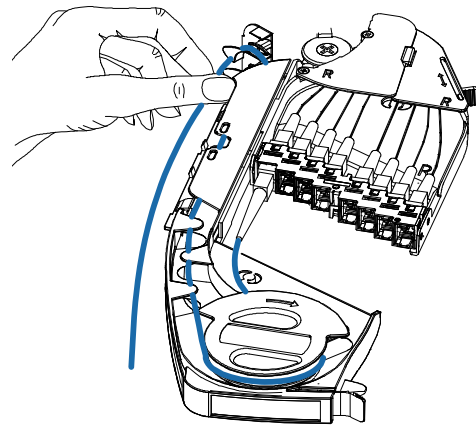


Figure 50 - Cable Routing in Tray

6. Place the cable run in troughs, channels, and other cable management system components before routing cable around ADF spools.

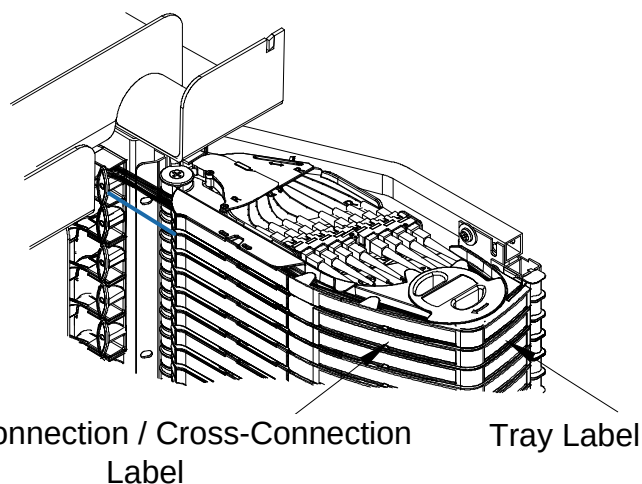


Figure 51 - Cable Routing in Module

If **interconnecting**, route cable through the cable management system (CMS) to the CMS drop above ADF, as shown in Figure 52.

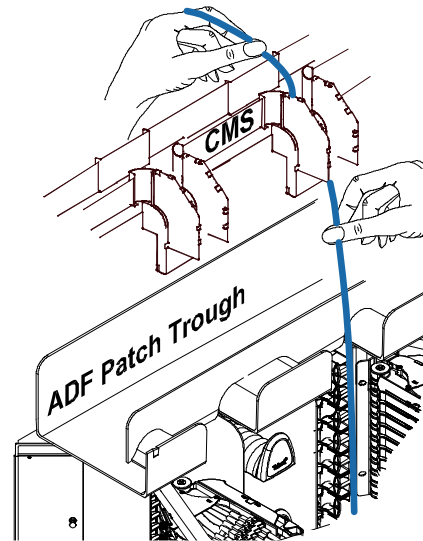


Figure 52 - Interconnecting Cable Routing

If **cross-connecting** between Main ADFs, place the patch cord in the upper or lower ADF patch trough(s) between the ADF frames, as shown in Figure 53.

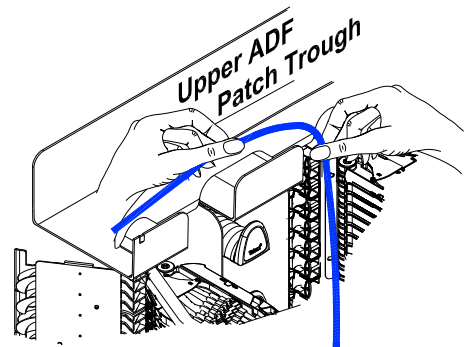


Figure 53 - Cross-Connecting Cable Routing

7. Route the cable down from the cascade along the nearest side of the nearest transition. Start by routing cable around the transition spool and then up and around the convenient storage and transition spools.

NOTE: Which sets of spools you use in routing will depend on 1) your interconnect or cross-connect application, and 2) your cable storage requirements. (See “Applications” on page 19, for more information about applications.)

8. Store excess cable on the Main ADFs and/or one or more InterBay Storage Panels.

This procedure is complete.

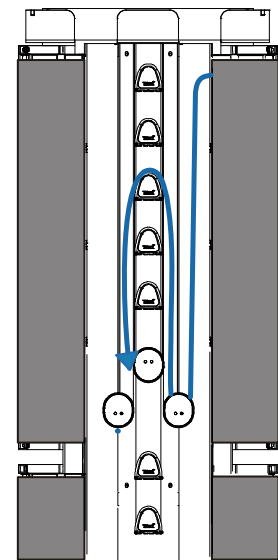
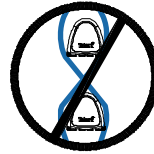
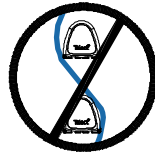


Figure 54 - Cable Routing Down Cascade



To minimize signal attenuation, make the least number of switchbacks as possible when routing fiber cable. NEVER WRAP, WEAVE, CRISSCROSS, OR "FIGURE 8" THE FIBER CABLES.



6.2 Routing & Storing Inboard Cabling

6.2.1 Interconnection

The following figures show various routing methods involving overhead interconnection cabling to a tray. Typical interconnections are between network elements or between a network element and either intrafacility cable (IFC) or outside plant (OSP) cable.

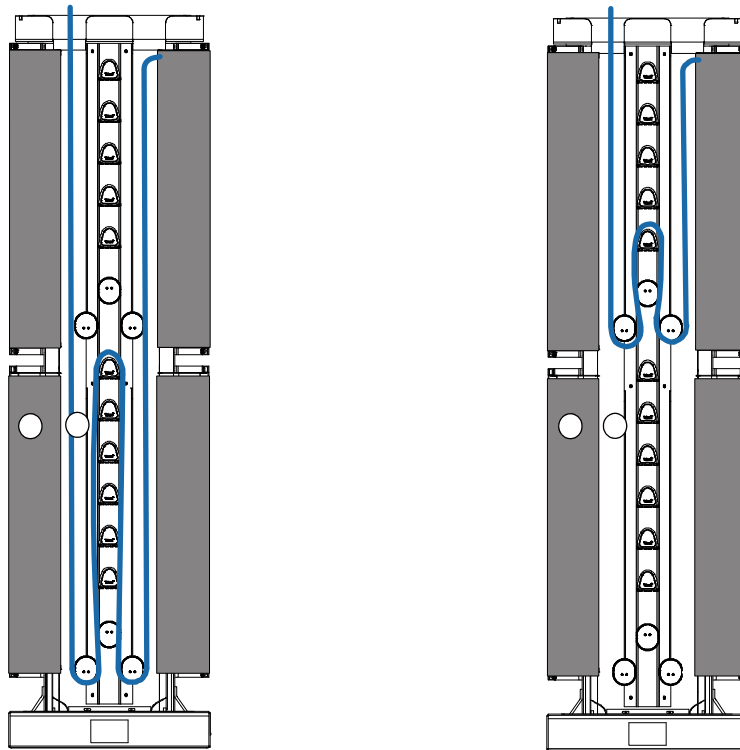


Figure 55 - Interconnection within a Single Frame

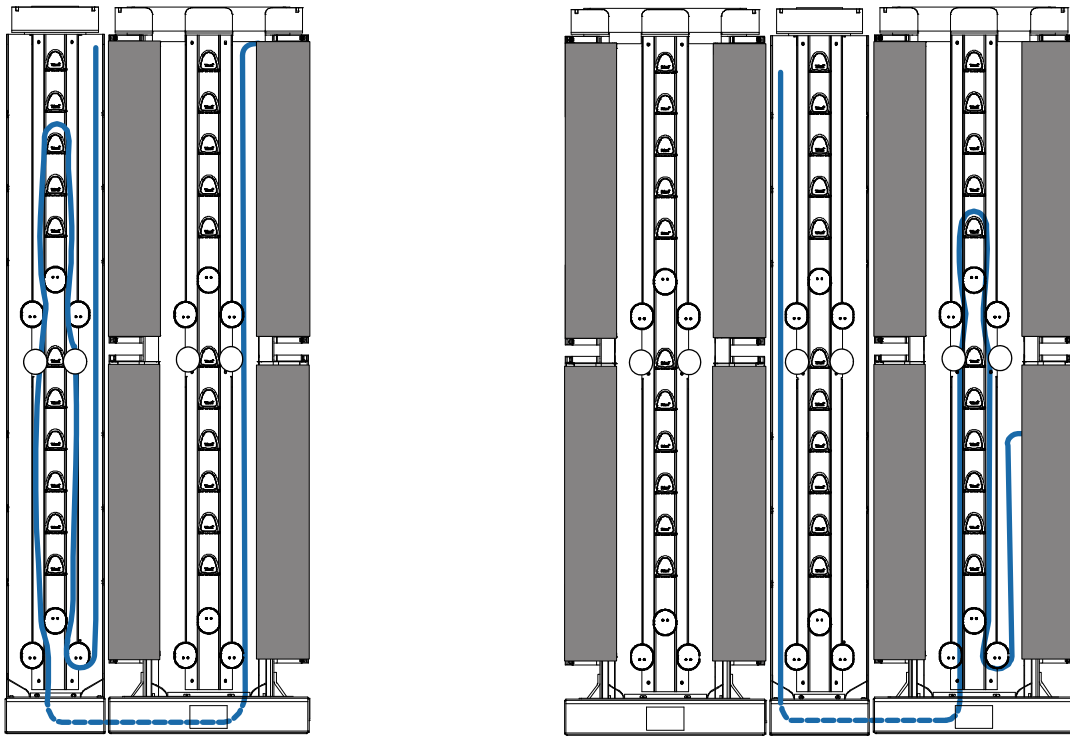


Figure 56 - Interconnection with Storage on ISP

6.2.2 Cross-Connection

The examples that follow show various routing methods involving cross-connection patch cabling between trays on the same or different Main ADFs. Typical interconnections are between network elements, or between a network element and either intrafacility cable (IFC) or outside plant (OSP) cable, or between IFC and/or OSP cables.

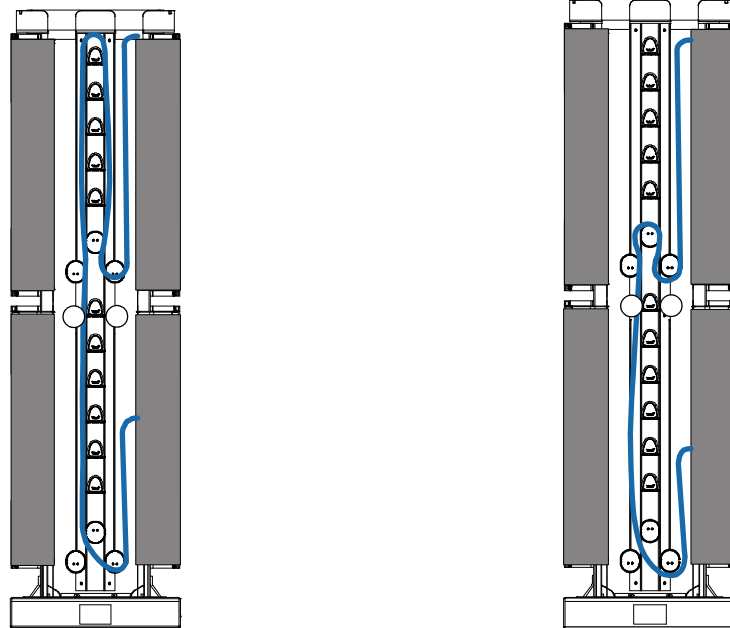


Figure 57 - Patching to Same Side of Same ADF

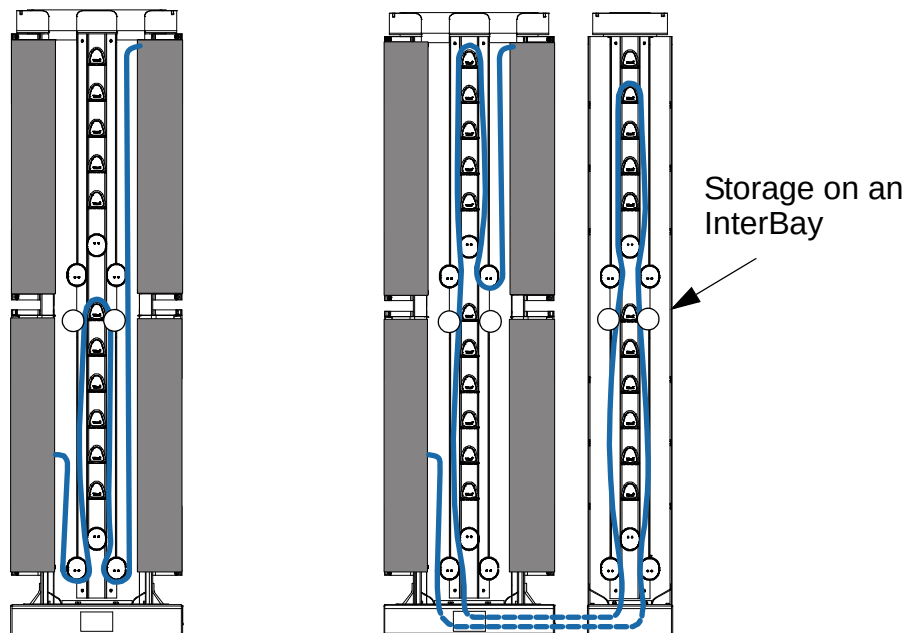


Figure 58 - Patching to Opposite Side of Same ADF

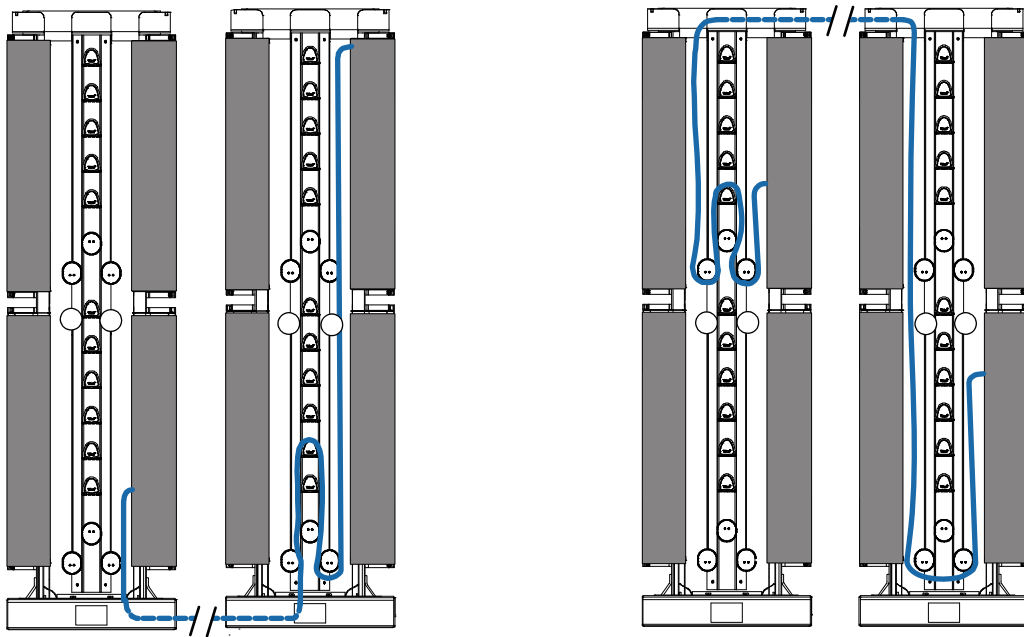


Figure 59 - Patching to Same Side of Different ADFs

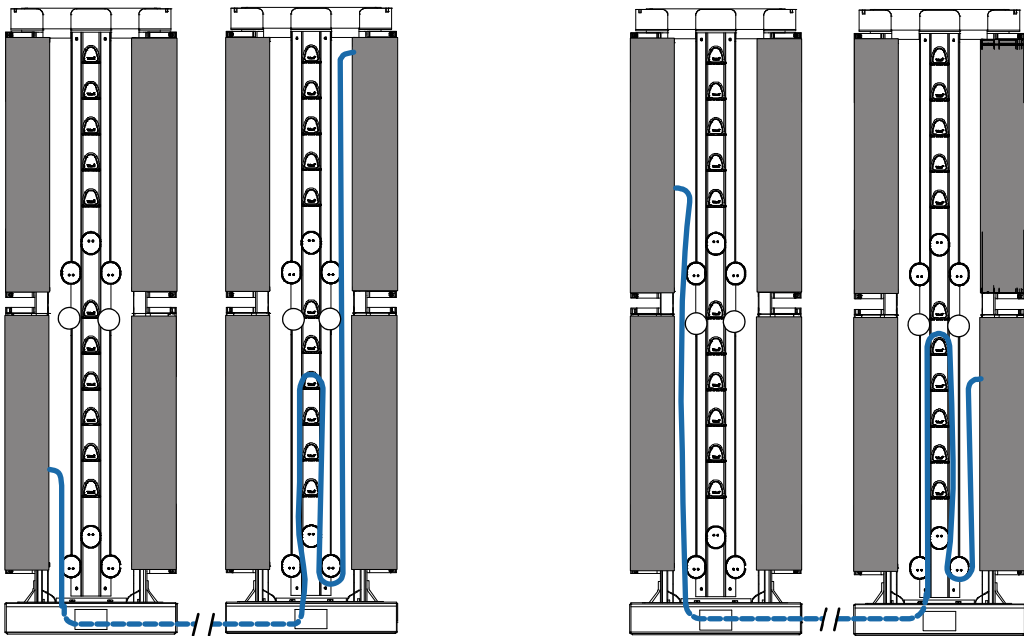


Figure 60 - Patching to Opposite Side of Different ADFs (without ISP)

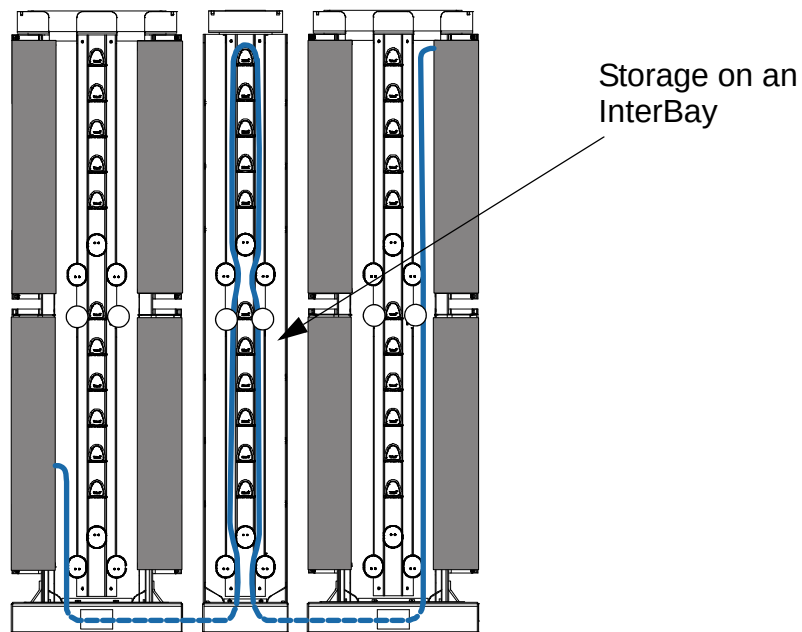


Figure 61 - Patching to Opposite Side of Different ADFs (with ISP)

Chapter 7: Service

Advanced Distribution Frame (ADF) Systems

7.1 Owner Maintenance

Telect's Main ADF and InterBay Storage Panels need no preventive maintenance.

7.2 Technical Support

By e-mail: getinfo@telect.com

By phone: 888-821-4856 or 509-921-6161

7.3 In-Warranty Service

Contact your Telect equipment distributor or call a Telect Customer Service Representative:

1-800-551-4567

1-509-926-6000

Telect will repair or replace defective products within the limits of the warranty. See "Repacking for Shipment" in this section.

NOTE: Call a Customer Service Representative for a Return Material Authorization (RMA) before returning any equipment.

7.4 Out-of-Warranty Service

The procedure for out-of-warranty service is the same as for in-warranty service, except that Telect charges a processing fee, and you must submit a Purchase Order along with a Return Material Authorization (RMA) before returning equipment. Call a Customer Service Representative for assistance in obtaining these forms. The processing fee guarantees a repair estimate and is credited against actual material and labor costs.

7.5 Repacking for Shipment

1. Tag the equipment showing owner's name, address, and telephone number, together with a detailed description of the problem.
2. Use the original shipping container if possible. If you do not have it, package the equipment in a way to prevent shipping damage. Include the RMA inside the container and legibly print the RMA number on the outside of the package, near the shipping address.
3. Insure the package.

NOTE: Telect is not liable for shipping damage.

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Chapter 8: Bays and Accessories

Advanced Distribution Frame (ADF) Systems

Description	Part Number
ADF Frames	
ADF 26" W x 24" D Standard XI Frame	ADF-26F-XI
ADF 600 mm W x 600 mm D Standard XI Frame	ADF-600F
ADF Floor Anchors	
Concrete Floor Anchors for ADF-26F Frame (Seismic Rated)	ADF-26ANCHOR
Raised Floor Anchors for ADF-26F Frame	ADF-26COMPFLR
Concrete Floor Anchors for ADF-600F Frame (Seismic Rated)	ADF-600ANCHOR
Raised Floor Anchors for ADF-600F Frame	ADF-600COMPFLR
Concrete Floor Anchors for ADF-12INT Interbay Storage Panel (Seismic Rated)	ADF-12ANCHOR
Raised Floor Anchors for ADF-12INT Interbay Storage Panel	ADF-12COMPFLR
Concrete Floor Anchors for ADF-300INT Interbay Storage Panel (Seismic Rated)	ADF-300ANCHOR
Raised Floor Anchors for ADF-300INT Interbay Storage Panel	ADF-300COMPFLR
Interbay Storage Panels	
12" Wide Interbay Storage Panel Standard	ADF-12INT
300 mm Wide Interbay Storage Panel Standard	ADF-300INT-XI
End Panels	
5" Wide End Panel for ADF-26F and ADF-12INT	ADF-26EP
2" Wide End Panel for ADF-26F and ADF-12INT	ADF-26EP-2
2" Wide End Panel for ADF-600F and ADF-300INT	ADF-300EP

Description	Part Number
Isolation Pads	
ADF-26F and ADF-26F-I Frame Isolation Pad	ADF-26F-ISOPAD
ADF-12INT Interbay Storage Panel Isolation Pad	ADF-12INT-ISOPAD
ADF 5" Wide End Panel Isolation Pad	ADF-26EP-5-ISOPAD
ADF 2" Wide End Panel Isolation Pad	ADF-26EP-2-ISOPAD
ADF-600F Frame Isolation Pad	ADF-600F-ISOPAD
ADF-300F Interbay Storage Panel Frame Isolation Pad	ADF-300F-ISOPAD
ADF ETSI End Panel Isolation Pad	ADF-300EP-ISOPAD
Grounding	
ADF Ground Wire	301597

Go to *telect.com* for additional information regarding intrafacility, network element or fan-out modules.